

April 23, 2003

**Re: Mirant Sugar Creek, LLC 167-17117-00123**

TO: Interested Parties / Applicant

FROM: Paul Dubenetzky  
Chief, Permits Branch  
Office of Air Quality

**Notice of Decision: Approval - Effective Immediately**

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-15-5-3, this permit is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3 and IC 13-15-6-1 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, ISTA Building, 150 W. Market Street, Suite 618, Indianapolis, IN 46204, **within (18) eighteen days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) the date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for consideration at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosure

FNPER.wpd 8/21/02



# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We make Indiana a cleaner, healthier place to live.*

Frank O'Bannon  
Governor

Lori F. Kaplan  
Commissioner

100 North Senate Avenue  
P.O. Box 6015  
Indianapolis, Indiana 46206-6015  
(317) 232-8603  
(800) 451-6027  
[www.in.gov/idem](http://www.in.gov/idem)

April 23, 2003

Robert W. Lewis  
Mirant Sugar Creek, LLC  
5900 Darwin Road  
West Terre Haute, IN 47885

Re: 167-17117  
Second Significant Modification to  
CP-167-12208-00123

Dear Robert Lewis:

Mirant Sugar Creek, LLC was issued a PSD permit on May 09, 2001 authorizing the construction and operation of a 1,008 megawatt natural gas simple and combined cycle plant consisting of four combustion turbines, four duct burners, two auxiliary boilers, and two cooling towers. An application requesting a modification to streamline startup and shutdown conditions in the permit was received on January 10, 2003. Pursuant to the provisions of 326 IAC 2-2 and IC 13-15-7-1 a significant modification to this permit is hereby approved as described in the attached Technical Support Document.

The following construction conditions are applicable to this permit modification:

## General Conditions

1. The data and information supplied with the application shall be considered part of this modification approval. Prior to any proposed change, which may affect the potential to emit (PTE) of the proposed project, the Office of Air Quality (OAQ) must approve the change.
2. This approval does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.
3. **Effective Date of the Permit**  
Pursuant to IC 13-15-5-3, this permit modification becomes effective upon its issuance. Pursuant to 326 IAC 2-2 (Prevention of Significant Deterioration), 326 IAC 2-1.1-6 (Public Notice), IC 4-21.5-3-7 (Review; Petition; Denial of Petition; Preliminary Hearing) and IC 13-15-6 (Appeal of Agency Determination to Issue or Deny Permit) this approval can be appealed as specified in these provisions.
4. All requirements and conditions of this approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.

Other than the changes detailed in the TSD for this approval, all other conditions of the permit shall remain unchanged and in effect. Please find enclosed the entire modified permit document.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Gurinder Saini, OAQ, 100

North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, or call at (800) 451-6027, press 0 and ask for Gurinder Saini or extension (3-0203), or dial (317) 233-0203.

Sincerely,

Original Signed by Paul Dubenetzky  
Paul Dubenetzky, Chief  
Permits Branch  
Office of Air Quality

GS

cc: File - Vigo County  
Vigo County Health Department  
Vigo County Air Pollution Control  
Air Compliance Section Inspector– Jim Thorpe  
Compliance Data Section - Karen Nowak  
Administrative and Development – Sara Cloe  
Technical Support and Modeling - Michele Boner

**NEW SOURCE CONSTRUCTION PERMIT**  
**Prevention of Significant Deterioration (PSD) Permit**  
**Office of Air Quality**  
**and**  
**Vigo County Air Pollution Control**

Mirant Sugar Creek LLC  
5900 Darwin Road  
West Terre Haute, IN 47885

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the emission units described in Section A (Source Summary) of this permit.

This permit is issued to the above mentioned company under the provisions of 326 IAC 2-1.1, 326 IAC 2-5.1, 326 IAC 2-6.1 and 40 CFR 52.780, with conditions listed on the attached pages.

This permit is also issued under the provisions of 326 IAC 2-2, 40 CFR 52.21, and 40 CFR 52.124 (Prevention of Significant Deterioration), with conditions listed on the attached pages.

Construction Permit No.: CP 167-12208-00123	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: May 09, 2001

First Significant Modification No.: 167-15295, issued July 24, 2002  
First Notice Only Change No.: 167-15906, issued August 06, 2002

Second Significant Modification No.: 167-17117	
Issued by: Original Signed by Paul Dubenetzky Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: April 23, 2003

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## SECTION A

## SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ), and Vigo County Air Pollution Control (VCAPC). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

### A.1 General Information [326 IAC 2-5.1-3(c)] [326 IAC 2-6.1-4(a)]

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The Permittee owns and operates a natural gas merchant power plant.

Authorized Individual:	Plant Manager
Source Address:	5900 Darwin Road, West Terre Haute, IN 47885
Mailing Address:	5900 Darwin Road, West Terre Haute, IN 47885
Phone Number:	(812) 538-2100
SIC Code:	4911
County Location:	Vigo
County Status:	Maintenance Attainment SO <sub>2</sub> ; Attainment for NO <sub>x</sub> , CO, PM <sub>10</sub> , Lead
Source Status:	Major, under PSD rules

### A.2 Emissions units and Pollution Control Equipment Summary

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This stationary source is approved to construct and operate the following emissions units and pollution control devices:

- (a) Four (4) natural gas-fired combustion turbine generators, designated as units CT11, CT12, CT21, CT22, with a maximum heat input capacity of 1,490.5 MMBtu/hr (per unit on a lower heat heating value), and exhausts to stacks designated as E11B, E12B, E21B and E22B, respectively, for use when operating in simple cycle. During combined cycle operation exhaust goes to stacks designated E11A, E12A, E21A and E22A, respectively.
- (b) Four (4) duct burners, designated as units DB11, DB12, DB21, DB22, with a maximum heat input capacity of 300 MMBtu/hr (per unit on a higher heating value basis) each and exhausts to stacks designated E11A, E12A, E21A, E22A, respectively.
- (c) Four (4) heat recovery steam generators, designated as units HRSG11, HRSG12, HRSG21, HRSG22.
- (d) Four (4) selective catalytic reduction systems, designated as units SCR11, SCR12, SCR21, SCR22.
- (e) Five (5) natural gas conditioning heaters, designated NGCH1, NGCH2, NGCH3, NGCH4, NGCH5 with a maximum heat input capacity of 5 MMBtu/hr (per unit on a higher heating value basis), and exhausts to stacks E7, E8, E9, E10, E11 respectively.
- (f) Two (2) steam turbines, designated as units ST1 and ST2.
- (g) Two (2) cooling towers, designated as units COOL1 and COOL2, exhausts to stacks designated E3 and E4, respectively.
- (h) Two (2) diesel fire pumps, each with a rating of 267 horsepower (hp).
- (i) Two (2) diesel emergency generators, each with a rating of 1,475 horsepower (hp).



A.3 Part 70 Permit Applicability [326 IAC 2-7-2]

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This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

- (a) It is a major source, as defined in 326 IAC 2-7-1(22);
- (b) It is an affected source under Title IV (Acid Deposition Control) of the Clean Air Act, as defined in 326 IAC 2-7-1(3);
- (c) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).

A.4 Acid Rain Permit Applicability [326 IAC 2-7-2]

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This stationary source shall be required to have a Phase II, Acid Rain permit by 40 CFR 72.30 (Applicability) because:

- (a) The combustion turbines are new units under 40 CFR 72.6.
- (b) The source cannot operate the combustion units until their Phase II, Acid Rain permit has been issued.

- (a) Any modifications required by 326 IAC 2-1.1 and 326 IAC 2-7-10.5 as a result of a change in the design or operation of emissions units described by this permit have been obtained prior to obtaining an Operation Permit Validation Letter.
- (b) The attached Affidavit of Construction shall be submitted to the Office of Air Quality (OAQ), Permit Administration & Development Section, and Vigo County Air Pollution Control (VCAPC).
  - (1) If the Affidavit of Construction verifies that the facilities covered in this Construction Permit were constructed as proposed in the application, then the facilities may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM and VCAPC.
  - (2) If the Affidavit of Construction does not verify that the facilities covered in this Construction Permit were constructed as proposed in the application, then the Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section prior to beginning operation of the facilities.
- (c) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.

- (d) Upon receipt of the Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section, the Permittee shall attach it to this document.
- (e) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).
- (f) Pursuant to 326 IAC 2-7-4(a)(1)(A)(ii) and 326 IAC 2-5.1-4, the Permittee shall apply for a Title V operating permit within twelve (12) months of the date on which the source first meets an applicability criterion of 326 IAC 2-7-2.

#### B.6 Phase Construction Time Frame

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Pursuant to 326 IAC 2-1.1-9(5)(Revocation of Permits) and 40 CFR 52.21, IDEM and VCAPC shall revoke this permit to construct if the:

- (a) Construction of Phase 1 has not begun within eighteen (18) months from the effective date of this permit or if during the construction of Phase 1, work is suspended for a continuous period of one (1) year or more.
- (b) Construction of Phase 2 has not begun within eighteen (18) months after the operation of Phase 1 or if during the construction of Phase 2, work is suspended for a continuous period of one (1) year or more.
- (c) Construction of Phase 3 has not begun within eighteen (18) months after the operation of Phase 2 or if during the construction of Phase 3, work is suspended for a continuous period of one (1) year or more.

The OAQ and VCPAC may extend such time upon satisfactory showing that an extension, formally requested by the Permittee is justified.

#### B.7 BACT Determination for Phase Constructions

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Pursuant to 40 CFR 52.21(j)(4), for phase construction projects, the determination of BACT shall be reviewed and modified as appropriate at the latest reasonable time, which occurs no later than eighteen (18) months prior to the scheduled permitted commencement of construction of each independent phase of the project.

#### B.8 Local Agency Requirement

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An application for an operation permit must be made ninety (90) days before start up to:

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, IN 47807

The operation permit issued by Vigo County shall contain as a minimum the conditions in the Operation Conditions section of this permit.

#### B.9 NSPS Reporting Requirement

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Pursuant to the New Source Performance Standards (NSPS), Part 60.7, Part 60.8, the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

- (a) Commencement of construction date (no later than 30 days after such date);
- (b) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
- (c) Actual start-up date (within 15 days after such date); and

- (d) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue P.O. Box 6015  
Indianapolis, IN 46206-6015

And

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, IN 47807

The application and enforcement of these standards have been delegated to the IDEM, OAQ.  
The requirements of 40 CFR Part 60 are also federally enforceable.

## SECTION C

## SOURCE OPERATION CONDITIONS

Entire Source
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### C.1 Major Source

Pursuant to 326 IAC 2-2 (Prevention of Significant Deterioration) and 40 CFR 52.21, and 326 IAC 2-7 (Part 70 Permit Program), this source is a major source.

### C.2 Preventive Maintenance Plan [326 IAC 1-6-3]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMP) ninety (90) days after the commencement of normal operations after the first construction phase, including the following information on each emissions unit:
- (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
  - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions;
  - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.
- (b) The Permittee shall implement the Preventive Maintenance Plans as necessary to ensure that failure to implement the Preventive Maintenance Plan does not cause or contribute to a violation of any limitation on emissions or potential to emit.
- (c) PMP's shall be submitted to IDEM, OAQ, and VCAPC upon request and shall be subject to review and approval by IDEM, OAQ, and VCAPC. IDEM, OAQ, and VCAPC may require the Permittee to revise its Preventive Maintenance Plan whenever lack of proper maintenance causes or contributes to any violation.

### C.3 Source Modification [326 IAC 2-7-10.5]

- (a) The Permittee must comply with the requirements of 326 IAC 2-7-10.5 whenever the Permittee seeks to construct new emissions units, modify existing emissions units, or otherwise modify the source.
- (b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue, P.O. Box 6015  
Indianapolis, Indiana 46206-6015

And

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, IN 47807

Any such application should be certified by the “responsible official” as defined by 326 IAC 2-7-1(34) only if a certification is required by the terms of the applicable rule.

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**C.4 Inspection and Entry [326 IAC 2-5.1-3(e)(4)(B)] [326 IAC 2-6.1-5(a)(4)]**

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Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee’s right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, VCAPC, U.S. EPA, or an authorized representative to perform the following:

- (a) Enter upon the Permittee's premises where a permitted source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- (b) Have access to and copy, at reasonable times, any records that must be kept under this title or the conditions of this permit or any operating permit revisions;
- (c) Inspect, at reasonable times, any processes, emissions units (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit or any operating permit revisions;
- (d) Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and
- (e) Utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

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**C.5 Transfer of Ownership or Operation [326 IAC 2-6.1-6(d)(3)]**

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Pursuant to [326 IAC 2-6.1-6(d)(3)]

- (a) In the event that ownership of this source is changed, the Permittee shall notify IDEM, OAQ, Permits Branch, and VCAPC, within thirty (30) days of the change.
- (b) The written notification shall be sufficient to transfer the permit to the new owner by an notice-only change pursuant to 326 IAC 2-6.1-6(d)(3).
- (c) IDEM, OAQ, and VCAPC shall issue a revised permit.

The notification which shall be submitted by the Permittee does require the certification by the “authorized individual” as defined by 326 IAC 2-1.1-1.

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**C.6 Permit Revocation [326 IAC 2-1-9]**

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Pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

- (a) Violation of any conditions of this permit.
- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.
- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.

- (e) For any cause which establishes in the judgment of IDEM and VCAPC, the fact that continuance of this permit is not consistent with purposes of this article.

**C.7 Opacity [326 IAC 5-1]**

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Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes, sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute non-overlapping integrated averages for a continuous opacity monitor in a six (6) hour period.

**C.8 Fugitive Dust Emissions [326 IAC 6-4]**

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The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions). 326 IAC 6-4-2(4) is not federally enforceable.

**C.9 Stack Height [326 IAC 1-7]**

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The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted by using good engineering practices (GEP) pursuant to 326 IAC 1-7-3.

**Testing Requirements**

**C.10 Performance Testing [326 IAC 3-6]**

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- (a) Compliance testing on new emissions units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval. All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

And

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, IN 47807

no later than thirty-five (35) days prior to the intended test date. The Permittee shall submit a notice of the actual test date to the above address so that it is received at least two weeks prior to the test date.

- (b) IDEM, OAQ, and VCAPC must receive all test reports within forty-five (45) days after the completion of the testing. IDEM, OAQ, and VCAPC may grant an extension, if the source submits to IDEM, OAQ, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

The documentation submitted by the Permittee does not require certification by the "authorized individual" as defined by 326 IAC 2-1.1-1.

## **Compliance Monitoring Requirements**

### **C.11 Compliance Monitoring [326 IAC 2-1.1-11]**

Compliance with applicable requirements shall be documented as required by this permit. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. All monitoring and record keeping requirements not already legally required shall be implemented when operation begins.

### **C.12 Maintenance of Monitoring Equipment [IC 13-14-1-13]**

- (a) In the event that a breakdown of the monitoring equipment occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem. To the extent practicable, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less frequent than required in Section D of this permit until such time as the monitoring equipment is back in operation. In the case of continuous monitoring, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less than one (1) hour until such time as the continuous monitor is back in operation.
- (b) The Permittee shall install, calibrate, quality assure, maintain, and operate all necessary monitors and related equipment. In addition, prompt corrective action shall be initiated whenever indicated.

### **C.13 Monitoring Methods [326 IAC 3]**

Any monitoring or testing required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, or other approved methods as specified in this permit.

### **C.14 Compliance Monitoring Plan - Failure to Take Response Steps [326 IAC 1-6] [326 IAC 2-2-4]**

- (a) The Permittee is required to implement a compliance monitoring plan to ensure that reasonable information is available to evaluate its continuous compliance with applicable requirements. This compliance monitoring plan is comprised of:
- (1) This condition;
  - (2) The Compliance Determination Requirements in Section D of this permit;
  - (3) The Compliance Monitoring Requirements in Section D of this permit;
  - (4) The Record Keeping and Reporting Requirements in Section C (Monitoring Data Availability, General Record Keeping Requirements, and General Reporting Requirements) and in Section D of this permit; and
  - (5) A Compliance Response Plan (CRP) for each compliance monitoring condition of this permit. CRP's shall be submitted to IDEM, OAQ, and VCAPC upon request and shall be subject to review and approval by IDEM, OAQ, and VCAPC. The CRP shall be prepared within ninety (90) days after the commencement of normal operation after the first phase of construction and shall be maintained on site, and



is comprised of:

- (A) Response steps that will be implemented in the event that compliance related information indicates that a response step is needed pursuant to the requirements of Section D of this permit; and
  - (B) A time schedule for taking such response steps including a schedule for devising additional response steps for situations that may not have been predicted.
- (b) For each compliance monitoring condition of this permit, appropriate response steps shall be taken when indicated by the provisions of that compliance monitoring condition. Failure to perform the actions detailed in the compliance monitoring conditions or failure to take the response steps within the time prescribed in the Compliance Response Plan, shall constitute a violation of the permit unless taking the response steps set forth in the Compliance Response Plan would be unreasonable.
- (c) After investigating the reason for the excursion, the Permittee is excused from taking further response steps for any of the following reasons:
  - (1) The monitoring equipment malfunctioned, giving a false reading. This shall be an excuse from taking further response steps providing that prompt action was taken to correct the monitoring equipment.
  - (2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously submitted a request for an administrative amendment to the permit, and such request has not been denied or;
  - (3) An automatic measurement was taken when the process was not operating; or
  - (4) The process has already returned to operating within "normal" parameters and no response steps are required.
- (d) Records shall be kept of all instances in which the compliance related information was not met and of all response steps taken.

**C.15 Actions Related to Noncompliance Demonstrated by a Stack Test**

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- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate corrective actions. The Permittee shall submit a description of these corrective actions to IDEM, OAQ, and VCAPC within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize emissions from the affected emissions unit while the corrective actions are being implemented. IDEM, OAQ, and VCAPC shall notify the Permittee within thirty (30) days, if the corrective actions taken are deficient. The Permittee shall submit a description of additional corrective actions taken to IDEM, OAQ, and VCAPC within thirty (30) days of receipt of the notice of deficiency. IDEM, OAQ and VCPAC reserve the authority to use enforcement activities to resolve noncompliant stack tests.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ, and VCAPC that retesting in one hundred and twenty (120) days is not practicable, IDEM, OAQ and VCAPC may extend the retesting deadline. Failure of the second test to demonstrate compliance with the appropriate permit conditions may be grounds for immediate revocation of the permit to operate the affected emissions unit.

The documents submitted pursuant to this condition do not require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1.

## **Record Keeping and Reporting Requirements**

### **C.16 Malfunctions Report [326 IAC 1-6-2]**

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Pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ), Vigo County Air Pollution Control (VCAPC), or appointed representative upon request.
- (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAQ and VCAPC, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
- (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

### **C.17 Monitoring Data Availability [326 IAC 2-6.1-2] [IC 13-14-1-13]**

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- (a) With the exception of performance tests conducted in accordance with Section C-Performance Testing, all observations, sampling, maintenance procedures, and record keeping, required as a condition of this permit shall be performed at all times the equipment is operating at normal representative conditions.
- (b) As an alternative to the observations, sampling, maintenance procedures, and record keeping of subsection (a) above, when the equipment listed in Section D of this permit is not operating, the Permittee shall either record the fact that the equipment is shut down or perform the observations, sampling, maintenance procedures, and record keeping that would otherwise be required by this permit.
- (c) If the equipment is operating but abnormal conditions prevail, additional observations and sampling should be taken with a record made of the nature of the abnormality.
- (d) If for reasons beyond its control, the operator fails to make required observations, sampling, maintenance procedures, or record keeping, reasons for this must be recorded.
- (e) At its discretion, IDEM and VCAPC may excuse such failure providing adequate justification is documented and such failures do not exceed five percent (5%) of the operating time in any quarter.
- (f) Temporary, unscheduled unavailability of staff qualified to perform the required observations, sampling, maintenance procedures, or record keeping shall be considered a valid reason for failure to perform the requirements stated in (a) above.

**C.18 General Record Keeping Requirements [326 IAC 2-6.1-2]**

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- (a) Records of all required monitoring data and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of three (3) years and available upon the request of an IDEM, OAQ, and VCAPC representative. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner or Vigo County Air Pollution Control makes a written request for records to the Permittee, the Permittee shall furnish the records to the Commissioner or Vigo County Air Pollution Control within a reasonable time.
- (b) Records of required monitoring information shall include, where applicable:
  - (1) The date, place, and time of sampling or measurements;
  - (2) The dates analyses were performed;
  - (3) The company or entity performing the analyses;
  - (4) The analytic techniques or methods used;
  - (5) The results of such analyses; and
  - (6) The operating conditions existing at the time of sampling or measurement.
- (c) Support information shall include, where applicable:
  - (1) Copies of all reports required by this permit;
  - (2) All original strip chart recordings for continuous monitoring instrumentation;
  - (3) All calibration and maintenance records;
  - (4) Records of preventive maintenance shall be sufficient to demonstrate that failure to implement the Preventive Maintenance Plan did not cause or contribute to a violation of any limitation on emissions or potential to emit. To be relied upon subsequent to any such violation, these records may include, but are not limited to: work orders, parts inventories, and operator's standard operating procedures. Records of response steps taken shall indicate whether the response steps were performed in accordance with the Compliance Response Plan required by Section C - Compliance Monitoring Plan - Failure to take Response Steps, of this permit, and whether a deviation from a permit condition was reported. All records shall briefly describe what maintenance and response steps were taken and indicate who performed the tasks.
- (d) All record keeping requirements not already legally required shall be implemented when operation begins.

**C.19 General Reporting Requirements [326 IAC 2-1.1-11] [326 IAC 2-6.1-2] [IC 13-14-1-13]**

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- (a) To affirm that the source has met all the compliance monitoring requirements stated in this permit the source shall submit a Semi-annual Compliance Monitoring Report. Any deviation from the requirements and the date(s) of each deviation must be reported. The Compliance Monitoring Report shall include the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (b) The report required in (a) of this condition and reports required by conditions in Section D

of this permit shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

And

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, IN 47807

- (c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, and VCAPC on or before the date it is due.
- (d) Unless otherwise specified in this permit, any semi-annual report shall be submitted within thirty (30) days of the end of the reporting period. The reports require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (e) All instances of deviations must be clearly identified in such reports. A reportable deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit or a rule. It does not include:
  - (1) An excursion from compliance monitoring parameters as identified in Section D of this permit unless tied to an applicable rule or limit; or
  - (2) A malfunction as described in 326 IAC 1-6-2; or
  - (3) Failure to implement elements of the Preventive Maintenance Plan unless lack of maintenance has caused or contributed to a deviation.
  - (4) Failure to make or record information required by the compliance monitoring provisions of Section D unless such failure exceeds 5% of the required data in any calendar quarter.

A Permittee's failure to take the appropriate response step when an excursion of a compliance monitoring parameter has occurred or failure to monitor or record the required compliance monitoring is a deviation.
- (f) Any corrective actions or response steps taken as a result of each deviation must be clearly identified in such reports.
- (g) The first report shall cover the period commencing on the date start of normal operation after the first phase of construction and ending on the last day of the reporting period.

## SECTION D.1 FACILITY CONDITIONS – Simple Cycle Operation

Four (4) natural gas-fired combustion turbines designated as units CT11, CT12, CT21, CT22, with a maximum heat input capacity of 1,490.5 MMBtu/hr (per unit on a lower heating value basis), and exhausts to stacks designated as E11B, E12B, E21B and E22B, respectively, for use when operating in simple cycle.

(The information describing the process contained in this facility description box is descriptive information, and does not constitute enforceable conditions.)

### Emission Limitations and Standards

#### D.1.1 Prevention of Significant Deterioration [326 IAC 2-2]

Pursuant to 326 IAC 2-2 (PSD), this new source is subject to the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) for emissions of PM, PM<sub>10</sub>, SO<sub>2</sub>, CO, NO<sub>x</sub>, and VOC because the potential to emit for these pollutants exceed the PSD major significant thresholds. Therefore, the PSD provisions require that this new source be reviewed to ensure compliance with the National Ambient Air Quality Standards (NAAQS), the applicable PSD air quality increments, and the requirements to apply the Best Available Control Technology (BACT) for the affected pollutants.

#### D.1.2 Particulate Matter (PM and PM<sub>10</sub>) Emission Limitations for Combustion Turbines

Pursuant to 326 IAC 2-2 (PSD Requirements) the total PM, is the sum of filterable PM, and PM<sub>10</sub> (filterable and condensible), emissions from each combustion turbine stack shall not exceed 0.012 pounds per MMBtu on a lower heating value basis, which is equivalent to eighteen (18) pounds per hour for each combustion turbine.

#### D.1.3 Opacity Limitations

Pursuant to 326 IAC 2-2 (PSD Requirements) the opacity from each associated combustion turbine stack shall not exceed twenty (20) percent (6-minute average), except for one 6-minute period per hour of not more than 27 percent. The opacity standards apply at all times, except during periods of startup, shutdown or malfunction. This satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).

#### D.1.4 Startup and Shutdown Limitations for Combustion Turbines

Pursuant to 326 IAC 2-2 (PSD Requirements), a startup or shutdown is defined as operation less than fifty (50) percent load. Each combustion turbine-generating unit shall comply with the following:

- (a) A startup or shutdown period shall not exceed two (2) hours. Each turbine shall not exceed 250 hours per year for startups and 42 hours per year for shutdowns.
- (b) The NO<sub>x</sub> emissions from each combustion turbine stack shall not exceed 32.5 tons per year for startup and shutdown emissions. Each combustion turbine shall not exceed 472 pounds of NO<sub>x</sub> per startup and 284 pounds of NO<sub>x</sub> per shutdown.
- (c) The CO emissions from each combustion turbine stack shall not 41.3 tons per year for startup and shutdown emissions. Each combustion turbine shall not exceed 600 pounds of CO per startup and 360 pounds of CO per shutdown.

#### D.1.5 Nitrogen Oxides (NO<sub>x</sub>) Emission Limitations for Combustion Turbines

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements) each combustion turbine generating unit shall comply with the following, excluding startup and shutdown:

- (1) During normal simple cycle operation (fifty (50) percent load or more), the NO<sub>x</sub> emissions from each combustion turbine shall not exceed 9.0 ppmvd corrected to fifteen (15) percent oxygen, based on a three (3) hour averaging period, which is equivalent to 54.0 pounds per hour for each combustion turbine.
  - (2) Each combustion turbine shall be equipped with dry low-NO<sub>x</sub> combustors and operated using good combustion practices to control NO<sub>x</sub> emissions.
  - (3) Use natural gas as the only fuel.
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the annual NO<sub>x</sub> emission from each of the four (4) combustion turbines, excluding startup and shutdown emissions, shall not exceed 236.52 tons per year.

#### D.1.6 Carbon Monoxide (CO) Emission Limitations for Combustion Turbines

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements), each combustion turbine shall comply with the following, excluding startup and shutdown:
- (1) During normal simple cycle operation (fifty (50) percent load or more), the CO emissions from each combustion turbine shall not exceed 9 ppmvd corrected to fifteen (15) percent oxygen, based on a 24 hour averaging period, which is equivalent to 26.4 pounds per hour from each combustion turbine.
  - (2) Good combustion practices shall be applied to minimize CO emissions.
  - (3) Use natural gas as the only fuel.
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the annual CO emission from each of the four (4) combustion turbines, excluding startup and shutdown emissions, shall not exceed 115.63 tons per year.

#### D.1.7 Sulfur Dioxide (SO<sub>2</sub>) Emission Limitations for Combustion Turbines

Pursuant to 326 IAC 2-2 (PSD Requirements), each combustion turbine shall comply with the following, excluding startup and shutdown:

- (1) During normal simple cycle operation (fifty (50) percent load or more), the SO<sub>2</sub> emissions from each combustion turbine shall not exceed 0.0028 pounds per MMBtu on a lower heating values basis, which is equivalent to 4.2 pounds per hour from each combustion turbine.
- (2) The use of low sulfur natural gas as the only fuel for the four (4) combustion turbines. The sulfur content of the natural gas shall not exceed 0.007 percent by weight (two (2) grains per 100 scf)
- (3) Perform good combustion practices.

#### D.1.8 Volatile Organic Compound (VOC) Emission Limitations for Combustion Turbines

Pursuant to 326 IAC 8-1-6 (VOC BACT Requirements), the following requirements must be met, excluding startup and shutdown:

- (1) The VOC emissions from each combustion turbine shall not exceed 0.0024 pounds per MMBtu on a lower heating value basis, which is equivalent to 3.7 pounds VOC per hour for each combustion turbine.
- (2) The use of natural gas as the only fuel

- (3) Good combustion practice shall be implemented to minimize VOC emissions.

#### D.1.9 40 CFR 60, Subpart GG (Stationary Gas Turbines)

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The four (4) natural gas combustion turbines are subject to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines) because the heat input at peak load is equal to or greater than 10.7 gigajoules per hour (10 MMBtu per hour), based on the lower heating value of the fuel fired.

Pursuant to 326 IAC 12-1 and 40 CFR 60, Subpart GG (Stationary Gas Turbines), the Permittee shall:

- (1) Limit nitrogen oxides emissions from the natural gas turbines to 0.0113% by volume at 15% oxygen on a dry basis, as required by 40 CFR 60.332, to:

$$\text{STD} = 0.0075 \frac{(14.4)}{Y} + F,$$

where STD = allowable NO<sub>x</sub> emissions (percent by volume at 15 percent oxygen on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt-hour.

F = NO<sub>x</sub> emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of 40 CFR 60.332.

- (2) Limit sulfur dioxide emissions, as required by 40 CFR 60.333, to 0.015 percent by volume at 15 percent oxygen on a dry basis, or use natural gas fuel with a sulfur content less than or equal to 0.8 percent by weight; Compliance with Condition D.1.7 constitutes compliance with this requirement.

#### D.1.10 Formaldehyde Limitations

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Pursuant to 326 IAC 2-1.1-5 (Air Quality Requirements), the formaldehyde emissions from each combustion turbine stack shall not exceed 0.00036 pounds of formaldehyde per MMBtu on a lower heating value basis.

#### D.1.11 Operational Limitation

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Pursuant to 326 IAC 2-2 (PSD Requirements), conditions contained within this section of the permit (D.1 Simple Cycle Operation) shall be followed (per turbine) when combustion turbine exhaust is routed through the integral bypass stack designated as E11B, E12B, E21B, and E22B. During periods when turbine exhaust is not routed through the integral bypass stacks (E11B, E12B, E21B, and E22B), the Permittee shall follow the conditions contained in Section D.2 Combined Cycle Operation.

#### D.1.12 Preventive Maintenance Plan [326 IAC 1-6-3]

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A Preventive Maintenance Plan, in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for each combustion turbine.

### Compliance Determination Requirements

#### D.1.13 Performance Testing

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- (a) Pursuant to 326 IAC 3-5 the Permittee shall conduct a performance test, not later than one-hundred and eighty days (180) after a facility startup or monitor installation, on the combustion turbine exhaust stacks (E11B, E12B, E21B, and E22B) in order to certify continuous emission monitoring systems for NO<sub>x</sub> and CO.
- (b) Within sixty (60) days after initial startup, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform formaldehyde test for each

combustion turbine stack (E11B, E12B, E21B, and E22B) utilizing methods approved by the Commissioner when operating 60%, 75%, and 100% load. These tests shall be performed in accordance with Section C – Performance Testing, in order to verify the formaldehyde emission factor as specified in Condition D.1.10.

- (c) Within sixty (60) days after initial startup, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform NO<sub>x</sub> and CO stack tests for each turbine (stacks designated as E11B, E12B, E21B, and E22B) during a startup/shutdown period, utilizing methods as approved by the Commissioner. These tests shall be performed in accordance with Section C – Performance Testing, in order to document compliance with Condition D.1.4.
- (d) Within sixty (60) days after achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall conduct NO<sub>x</sub> and SO<sub>2</sub> stack tests for each turbine utilizing methods approved by the Commissioner. These tests shall be performed in accordance with 40 CFR 60.335 and Section C – Performance Testing, in order to document compliance with Condition D.1.9.
- (e) Within sixty (60) days after initial startup, but no later than one-hundred eighty (180) after initial startup, the Permittee shall perform PM, PM<sub>10</sub> (filterable and condensable), and VOC stack tests for each combustion turbine stack (E11B, E12B, E21B, and E22B) utilizing methods approved by the Commissioner. These test shall be performed in accordance with Section C – Performance Testing, in order to document compliance with Condition D.1.2 and D.1.8(1).
- (f) IDEM, OAQ and VCAPC retain the authority under 326 IAC 2-1-4(f) to require the Permittee to perform additional and future compliance testing as necessary.

#### D.1.14 40 CFR Part 60, Subpart GG Compliance Requirements (Stationary Gas Turbines)

Pursuant to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines), the Permittee shall monitor the nitrogen and sulfur content of the natural gas on a monthly basis as follows:

- (a) Determine compliance with the nitrogen oxide and sulfur dioxide standards in 40 CFR 60.332 and 60.333(a), per requirements described in 40 CFR 60.335(c);
- (b) Determine the sulfur content of the natural gas being fired in the turbine by ASTM Methods D 1072-80, D 3030-81, D 4084-82, or D 3246-81. The applicable ranges of some ASTM methods mentioned are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the approval of the Administrator; and
- (c) Determine the nitrogen content of the natural gas being fired in the turbine by using analytical methods and procedures that are accurate to within 5 percent and are approved by the Administrator.

The analyses required above may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor or any other qualified agency.

Owners, operators or fuel vendors may develop custom fuel schedules for determination of the nitrogen and sulfur content based on the design and operation of the affected facility and the characteristics of the fuel supply. These schedules shall be substantiated with data and must be approved by the Administrator before they can be used to comply with the above requirements.

#### D.1.15 Continuous Emission Monitoring

- (a) The owner or operator of a new source with an emission limitation or permit requirement established under 326 IAC 2-5.1-3 and 326 IAC 2-2, shall be required to install a



continuous emissions monitoring system or alternative monitoring plan as allowed under the Clean Air Act and 326 IAC 3-5-1(d).

- (b) The Permittee shall install, calibrate, certify, operate and maintain a continuous emissions monitoring system for each combustion turbine stack for NO<sub>x</sub>, CO, and O<sub>2</sub> (E11B, E12B, E21B and E22B) in accordance with 326 IAC 3-5-2 and 3-5-3.
  - (1) The continuous emission monitoring system (CEMS) shall measure NO<sub>x</sub> and CO emissions rates in pounds per hour, uncorrected parts per million, and parts per million on a dry volume basis (ppmvd) corrected to 15% O<sub>2</sub>. The use of CEMS to measure and record the NO<sub>x</sub> and CO hourly limits, is sufficient to demonstrate compliance with the limitations established in the BACT analysis and set forth in the permit. To demonstrate compliance with the NO<sub>x</sub> limit, the source shall take an average of the ppmvd corrected to 15% O<sub>2</sub> over a three (3) hour averaging period. To demonstrate compliance with the CO limit, the source shall take an average of the ppmvd corrected to 15% O<sub>2</sub> over a twenty four (24) hour averaging period. The source shall maintain records of the ppmvd corrected to 15% O<sub>2</sub> and the pounds per hour.
  - (2) The Permittee shall determine compliance with Conditions D.1.4 utilizing data from the NO<sub>x</sub>, CO, and O<sub>2</sub> CEMS, the fuel flow meter, and Method 19 calculations.
  - (3) The Permittee shall submit to IDEM, OAQ, and VCAPC within ninety (90) days after monitor installation, a complete written continuous monitoring standard operating procedure (SOP), in accordance with the requirements of 326 IAC 3-5-4.
  - (4) The Permittee shall record the output of the system and shall perform the required record keeping, pursuant to 326 IAC 3-5-6, and reporting, pursuant to 326 IAC 3-5-7.

**Record Keeping and Reporting Requirements [326 IAC 2-5.1-3(e)(2)] [326 IAC 2-6.1-5(a)(2)]**

**D.1.16 Record Keeping Requirements**

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- (a) To document compliance with Condition D.1.2, D.1.5 through D.1.9, and D.1.11, the Permittee shall maintain records of the following:
  - (1) Amount of natural gas combusted (in MMCF) per turbine during each month
  - (2) The percent sulfur content of the natural gas
  - (3) The average heat input, on a lower heating value basis, of each turbine on a 30-day rolling average.
- (b) To document compliance with Condition D.1.4, the Permittee shall maintain records of the following:
  - (1) The type of operation (i.e., startup or shutdown) with supporting operational data
  - (2) The total number of minutes for startup or shutdown per 24-hour period per turbine
  - (3) The CEMS data, fuel flow meter data, and Method 19 calculations corresponding to each startup and shutdown period.
- (c) To document compliance with Conditions D.1.5 and D.1.6, the Permittee shall maintain

records of the emission rates of NO<sub>x</sub> and CO in pounds per hour and ppmvd corrected to 15% oxygen.

- (d) To document compliance with Condition D.1.15, the Permittee shall maintain records, including raw data of all monitoring data and supporting information, for a minimum of five (5) years from the date as described in 326 IAC 3-5-7(a). The records shall include the information described in 326 IAC 3-5-7(b).
- (e) To document compliance with Condition D.1.9, the source shall maintain records of the natural gas analyses, including the sulfur and nitrogen content of the gas, for a period of three (3) years.
- (f) A record of the hours of operation per year per turbine for simple cycle operation shall be maintained.
- (g) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit

#### D.1.17 Reporting Requirements

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The Permittee shall submit the following information on a quarterly basis:

- (a) Records of excess NO<sub>x</sub> and CO emissions (defined in 326 IAC 3-5-7 and 40 CFR Part 60.7) from the continuous emissions monitoring system for each parameter described in Condition D.1.15. These reports shall be submitted within thirty (30) calendar days following the end of each calendar quarter and in accordance with Section C – General Reporting Requirements of this permit.
- (b) The Permittee shall report periods of excess emissions, as required by 40 CFR 60.334(c)
- (c) A quarterly summary of the CEMs data to document compliance with D.1.5(a)(1) and D.1.6(a)(1) shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, within thirty (30) days after the end of the quarter being reported.
- (d) A quarterly summary of the total number of startup and shutdown hours of operation and emissions corresponding to startup and shutdown to document compliance with Condition D.1.4, shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, within thirty (30) days after the end of the quarter being reported.

## SECTION D.2 FACILITY CONDITIONS – Combined Cycle Operation

- (a) Four (4) natural gas-fired combustion turbines, designated as units CT11, CT12, CT21, CT22, with a maximum heat input capacity of 1,490.5 MMBtu/hr (per unit on a lower heating value basis), and exhausts to stacks designated as E11B, E12B, E21B and E22B, respectively, for use when operating in simple cycle. During combined cycle operation exhaust goes to stacks designated E11A, E12A, E21A and E22A, respectively.
- (b) Four (4) duct burners, designated as units DB11, DB12, DB21, DB22, with a maximum heat input capacity of 300 MMBtu/hr (per unit on a higher heating value basis) each and exhausts to stacks designated E11A, E12A, E21A, E22A, respectively.
- (c) Four (4) heat recovery steam generators, designated as units HRSG11, HRSG12, HRSG21, HRSG22.
- (d) Four (4) selective catalytic reduction systems, designated as units SCR11, SCR12, SCR21, SCR22.
- (e) Two (2) cooling towers, designated as units COOL1 and COOL2, exhausts to stacks designated E3 and E4, respectively.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### Emission Limitations and Standards

#### D.2.1 Prevention of Significant Deterioration [326 IAC 2-2]

Pursuant to 326 IAC 2-2 (PSD), this new source is subject to the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) for emissions of PM, PM<sub>10</sub>, SO<sub>2</sub>, CO, NO<sub>x</sub>, and VOC because the potential to emit for these pollutants exceed the PSD major significant thresholds. Therefore, the PSD provisions require that this new source be reviewed to ensure compliance with the National Ambient Air Quality Standards (NAAQS), the applicable PSD air quality increments, and the requirements to apply the Best Available Control Technology (BACT) for the affected pollutants.

#### D.2.2 Particulate Matter (PM/PM<sub>10</sub>) Emission Limitations for Combustion Turbines/Duct Burners

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements), the PM (filterable) or PM<sub>10</sub> (filterable and condensable), emissions from each combustion turbine shall not exceed 0.012 pounds per MMBtu (on a lower heating value basis) which is equivalent to eighteen (18) pounds per hour for each combustion turbine.
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the PM (filterable) or PM<sub>10</sub> (filterable and condensable), emissions from each duct burner shall not exceed 0.0075 pounds per MMBtu on a higher heating value basis, which is equivalent to 2.2 pounds per hour.
- (c) Pursuant to 326 IAC 2-2 (PSD Requirements), the PM (filterable) or PM<sub>10</sub> (filterable and condensable), emissions from each combustion turbine when its associated duct burner is operating, shall not exceed 20.2 pounds per hour for each combustion turbine and duct burner.

#### D.2.3 Opacity Limitations

Pursuant to 326 IAC 2-2 (PSD Requirements) the opacity from each associated combustion turbine stack shall not exceed twenty (20) percent (6-minute average), except for one 6-minute period per hour of not more than 27 percent. The opacity standards apply at all times, except

during periods of startup, shutdown or malfunction. This satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).

#### D.2.4 Particulate Matter Emissions (PM/PM<sub>10</sub>) for Cooling Towers

Pursuant to 326 IAC 2-2 (PSD Requirements) each cooling tower shall comply with the following:

- (1) PM emissions shall not exceed 1.41 pounds per hour, and
- (2) Employ good design and operation practices to limit emissions from the cooling towers.
- (3) For compliance purposes, cooling tower PM emissions shall be calculated using emission factors from USEPA AP-42 Section 13.4.

#### D.2.5 Startup and Shutdown Limitations for Combustion Turbines

Pursuant to 326 IAC 2-2 (PSD Requirements), following applies to each combustion turbine:

- (a) A startup is defined as the operation in the period of time from the initiation of combustion until the turbine reaches a minimum load of seventy (70) percent or instantaneous outlet SCR NO<sub>x</sub> concentration reaches level less than 3.0 ppm at 15% O<sub>2</sub> whichever occurs earlier.
- (b) A shutdown is defined as operation at less than fifty (50) percent load descending to flame out.
- (c) An event is defined as exactly one (1) startup and exactly one (1) shutdown and shall not exceed six and five-tenth (6.5) hours.
- (d) Each turbine shall not exceed 583 hours in 12 consecutive month period in startup and shutdown mode with compliance demonstrated at the end of each month.
- (e) The NO<sub>x</sub> emissions from each combustion turbine stack shall not exceed 64.9 tons in 12 consecutive month period for startup and shutdown duration with compliance demonstrated at the end of each month. Each combustion turbine shall not exceed 997 pounds of NO<sub>x</sub> emissions per event.
- (f) The CO emissions from each combustion turbine stack shall not exceed 82.5 tons in 12 consecutive month period for startup and shutdown duration with compliance demonstrated at the end of each month. Each combustion turbine shall not exceed 2446 pounds of CO emissions per event.

#### D.2.6 Nitrogen Oxides (NO<sub>x</sub>) Emission Limitations for Combustion Turbines/Duct Burners

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements) each combustion turbine/steam generating unit shall comply with the following, excluding startup and shutdown:
  - (1) During normal combined cycle operation, the NO<sub>x</sub> emissions from each combustion turbine stack shall not exceed 3.0 ppmvd corrected to fifteen (15) percent oxygen, based on a three (3) hour averaging period, which is equivalent to 17.89 pounds per hour for each combustion turbine.
  - (2) During normal combined cycle operation, the NO<sub>x</sub> emissions from each combustion turbine stack, when its associated duct burner is operating, shall not exceed 3.0 ppmvd corrected to fifteen (15) percent oxygen, based on a three (3) hour averaging period, which is equivalent to 18 pounds per hour for each combustion turbine and duct burner.
  - (3) The duct burners shall not be operated until normal operation begins.

- (4) Each combustion turbine shall be equipped with dry low-NO<sub>x</sub> burners and operated using good combustion practices to control NO<sub>x</sub> emissions.
- (5) A selective catalytic reduction (SCR) system shall be installed and operated at all times, except during periods of startup and shutdown, to control NO<sub>x</sub> emissions.
- (6) Use natural gas as the only fuel.
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the annual NO<sub>x</sub> emissions from each of the four (4) combustion turbines and associated duct burners, excluding startup and shutdown emissions, shall not exceed 78.36 tons per year.

#### D.2.7 Carbon Monoxide (CO) Emission Limitations for Combustion Turbines/Duct Burners

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements), each steam generating unit shall comply with the following, excluding startup and shutdown:
  - (1) During normal combined cycle operation, the CO emissions from each combustion turbine shall not exceed 9 ppmvd corrected to 15% O<sub>2</sub> on a 24 hour averaging period, which is equivalent to 26.4 pounds per hour for each combustion turbine.
  - (2) During normal operation, the CO emissions from each combustion turbine stack, when its associated duct burner is operating, shall not exceed 14 ppmvd corrected to 15% O<sub>2</sub> on a 24 hour averaging period, which is equivalent to 51.0 pounds per hour for each combustion turbine and duct burner.
  - (3) The duct burners shall not be operated until normal operation begins.
  - (4) Good combustion practices shall be applied to minimize CO emissions.
  - (5) Use natural gas as the only fuel
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the annual CO emissions from each of the four (4) combustion turbines and associated duct burners, excluding startup and shutdown emissions, shall not exceed 131.86 tons per year.

#### D.2.8 Sulfur Dioxide (SO<sub>2</sub>) Emission Limitations for Combustion Turbines/Duct Burners

Pursuant to 326 IAC 2-2 (PSD Requirements), each combustion turbine and duct burner shall comply with the following, excluding startup and shutdown:

- (1) During normal combined cycle operation, the SO<sub>2</sub> emissions from each combustion turbine shall not exceed 0.0028 pounds per MMBtu on a lower heating value basis, which is equivalent to 4.2 pounds per hour for each combustion turbine.
- (2) During normal operation of each duct burner, the SO<sub>2</sub> emissions shall not exceed 0.001 pounds per MMBtu on a higher heating value basis, which is equivalent to 0.2 pounds per hour for each combustion turbine.
- (3) During normal combined cycle operation of each combustion turbine when its associated duct burner is operating, the SO<sub>2</sub> emissions from each turbine stack shall not exceed 4.4 pounds per hour.
- (4) The use of low sulfur natural gas as the only fuel for the combustion turbines and duct burners. The sulfur content of the natural gas shall not exceed 0.007

percent by weight (two (2) grains per 100 scf).

- (5) Perform good combustion practice.

#### D.2.9 Volatile Organic Compound (VOC) Emission Limitations for Combustion Turbines/Duct Burners

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Pursuant to 326 IAC 8-1-6 (VOC Requirements) and 326 2-2 (PSD Requirements), the following requirements must be met, excluding startup and shutdown:

- (1) The VOC emissions from each combustion turbine shall not exceed 0.0025 pounds per MMBtu on a lower heating value basis, which is equivalent to 3.7 pounds VOC per hour for each combustion turbine.
- (2) The VOC emissions from each duct burner shall not exceed 0.005 pounds per MMBtu on a higher heating value basis, which is equivalent to 1.6 pounds VOC per hour.
- (3) The VOC emissions from each combustion turbine stack, when its associated duct burner is operating shall not exceed 5.3 pounds of VOC per hour.
- (4) The use of natural gas as the only fuel.
- (5) Good combustion practice shall be implemented to minimize VOC emissions.

#### D.2.10 40 CFR 60, Subpart GG (Stationary Gas Turbines)

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The four (4) natural gas combustion turbines are subject to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines) because the heat input at peak load is equal to or greater than 10.7 gigajoules per hour (10 MMBtu per hour), based on the lower heating value of the fuel fired.

Pursuant to 326 IAC 12-1 and 40 CFR 60, Subpart GG (Stationary Gas Turbines), the Permittee shall:

- (1) Limit nitrogen oxides emissions from the natural gas turbines to 0.0113% by volume at 15% oxygen on a dry basis, as required by 40 CFR 60.332, to:

$$\text{STD} = 0.0075 \frac{(14.4)}{Y} + F,$$

where STD = allowable NO<sub>x</sub> emissions (percent by volume at 15 percent oxygen on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt-hour.

F = NO<sub>x</sub> emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of 40 CFR 60.332.

- (2) Limit sulfur dioxide emissions, as required by 40 CFR 60.333, to 0.015 percent by volume at 15 percent oxygen on a dry basis, or use natural gas fuel with a sulfur content less than or equal to 0.8 percent by weight; Compliance with Condition D.2.8 constitutes compliance with this condition.

#### D.2.11 40 CFR Part 60, Subpart Da (Electric Utility Steam Generating Units)

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The heat recovery steam generator (HRSG) duct burners (DB) are subject to 40 CFR Part 60, Subpart Da because the heat input capacity is greater than 250 MMBtu/hr on a higher heating value basis.

Pursuant to 40 CFR Part 60, Subpart Da, the Permittee shall:

- (a) The opacity from each combustion turbine stack, when its associated duct burner is

operating, shall not exceed twenty (20) percent (6-minute average), except for on 6-minute period per hour of not more than 27 percent. The opacity standards apply at all times, except during periods of startup, shutdown or malfunction. This satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).

- (b) The PM emissions from each duct burner shall not exceed 0.03 pounds per MMBtu heat input on a higher heating value basis. Compliance with Condition D.2.2 constitutes compliance with this condition.
- (c) Each duct burner shall not exceed 1.6 lb/MW-hr NO<sub>x</sub>, on a thirty (30) day rolling average.
- (d) Each duct burner shall not exceed 0.20 pounds SO<sub>2</sub> per MMBtu heat input, determined on a 30-day rolling average basis. Compliance with condition D.2.8 constitutes compliance with this condition.

#### D.2.12 Formaldehyde Limitations

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Pursuant to 326 IAC 2-1.1-5 (Air Quality Requirements), the formaldehyde emissions from each combustion turbine and duct burner shall not exceed 0.00036 pounds of formaldehyde per MMBtu, excluding startup and shutdown.

#### D.2.13 Ammonia Limitations

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Pursuant to 326 IAC 2-1.1-5 (Air Quality Requirements), the ammonia emissions from each combustion turbine stack shall not exceed ten (10) ppmvd corrected to 15% O<sub>2</sub>.

#### D.2.14 Preventive Maintenance Plan [326 IAC 1-6-3]

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A Preventive Maintenance Plan, in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for each combustion turbine and its control device.

### Compliance Determination Requirements

#### D.2.15 Performance Testing

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- (a) Pursuant to 326 IAC 3-5 the Permittee shall conduct a performance test, no later than one-hundred and eighty days (180) after the facility startup or monitor installation, on the combustion turbine exhaust stack (E11A, E12A, E21A, and E22A) in order to certify the continuous emission monitoring systems for NO<sub>x</sub> and CO.
- (b) Within sixty (60) days of achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform formaldehyde stack tests for turbines utilizing a method approved by the Commissioner when operating at 60%, 75% and 100% loads on stacks E21A and E22A only. In addition during the same time period specified earlier, the Permittee shall perform formaldehyde stack tests for combustion turbines for stacks E11A, E12A, E21A and E22A when operating the combustion turbines at 100% load and each duct burner being fired to full capacity. These tests shall be performed in accordance with Section C – Performance Testing, in order to verify the formaldehyde emission limit specified in Condition D.2.12.
- (c) Within sixty (60) days of achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform NO<sub>x</sub> and CO stack tests for each combustion turbine stack (E11A, E12A, E21A, and E22A) during a startup/shutdown period, utilizing methods approved by the Commissioner. These tests shall be performed in accordance with Section C – Performance Testing, in order to document compliance with Condition D.2.5.
- (d) Within sixty (60) days of achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall conduct NO<sub>x</sub> and SO<sub>2</sub> stack tests for each combustion turbine stack (E11A, E12A, E21A, and E22A)

utilizing methods approved by the Commissioner. These tests shall be performed in accordance with 40 CFR 60.335 and Section C – Performance Testing, in order to document compliance with Condition D.2.10.

- (e) Within sixty (60) days of achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform PM, ammonia, and VOC stack tests for each combustion turbine stack (E11A, E12A, E21A, and E22A) utilizing methods approved by the Commissioner. These tests shall be performed in accordance with 40 CFR 60.335, 40 CFR 60.48(a), and Section C – Performance Testing, in order to document compliance with D.2.2(b), D.2.9, and D.2.13.
- (f) IDEM, OAQ and VCAPC retain the authority under 326 IAC 2-1-4(f) to require the Permittee to perform additional and future compliance testing as necessary.

#### D.2.16 Oxides of Nitrogen NO<sub>x</sub> (SCR operation) [326 IAC 2-2]

- (a) Pursuant to 326 IAC 2-2 (PSD requirements), the Permittee shall determine the lowest SCR inlet flue gas temperature during the stack test required in condition D.2.15 (a) and (c) that demonstrates compliance with limits in condition D.2.6, as approved by IDEM.
- (b) From the date of the valid stack test, during a startup, the Permittee shall measure and record the SCR inlet flue gas temperature and start ammonia injection in the SCR units to control NO<sub>x</sub> emissions from the gas turbines, as soon as the SCR inlet flue gas temperature reaches the temperature determined in part (a) above or turbine load reaches 70%, whichever occurs earlier.

#### D.2.17 40 CFR Part 60, Subpart GG Compliance Requirements (Stationary Gas Turbines)

Pursuant to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines), the Permittee shall monitor the nitrogen and sulfur content of the natural gas on a monthly basis as follows:

- (a) Determine compliance with the nitrogen oxide and sulfur dioxide standards in 40 CFR 60.332 and 60.333(a), per requirements described in 40 CFR 60.335(c);
- (b) Determine the sulfur content of the natural gas being fired in the turbine by ASTM Methods D 1072-80, D 3030-81, D 4084-82, or D 3246-81. The applicable ranges of some ASTM methods mentioned are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the approval of the Administrator; and
- (c) Determine the nitrogen content of the natural gas being fired in the turbine by using analytical methods and procedures that are accurate to within 5 percent and are approved by the Administrator.

The analyses required above may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor or any other qualified agency.

Owners, operators or fuel vendors may develop custom fuel schedules for determination of the nitrogen and sulfur content based on the design and operation of the affected facility and the characteristics of the fuel supply. These schedules shall be substantiated with data and must be approved by the Administrator before they can be used to comply with the above requirements.

#### D.2.18 Continuous Emission Monitoring (CEMs)

- (a) The owner or operator of a new source with an emission limitation or permit requirement established under 326 IAC 2-5.1-3 and 326 IAC 2-2, shall be required to install a continuous emissions monitoring system or alternative monitoring plan as allowed under the Clean Air Act and 326 IAC 3-5-1(d).



- (b) The Permittee shall install, calibrate, certify, operate and maintain a continuous emission monitoring system for NO<sub>x</sub> and CO, for stacks designated as E11A, E12A, E21A and E22A in accordance with 326 IAC 3-5-2 and 3-5-3.
  - (1) The continuous emission monitoring system (CEMS) shall measure NO<sub>x</sub> and CO emissions rates in pounds per hour and parts per million (ppmvd) corrected to 15% O<sub>2</sub>. The use of CEMS to measure and record the NO<sub>x</sub> and CO hourly limits, is sufficient to demonstrate compliance with the limitations established in the BACT analysis and set forth in the permit. To demonstrate compliance with the NO<sub>x</sub> limit, the source shall take an average of the parts per million (ppmvd) corrected to 15% O<sub>2</sub> over a three (3) hour averaging period. To demonstrate compliance with the CO limit, the source shall take an average of the parts per million (ppmvd) corrected to 15% O<sub>2</sub> over a twenty four (24) hour averaging period. The source shall maintain records of the parts per million and the pounds per hour.
  - (2) The Permittee shall determine compliance with Condition D.2.5 utilizing data from the NO<sub>x</sub>, CO, and O<sub>2</sub> CEMS, the fuel flow meter, and Method 19 calculations.
  - (3) The Permittee shall submit to IDEM, OAQ, within ninety (90) days after monitor installation, a complete written continuous monitoring standard operating procedure (SOP), in accordance with the requirements of 326 IAC 3-5-4.
  - (4) The Permittee shall record the output of the system and shall perform the required record keeping, pursuant to 326 IAC 3-5-6, and reporting, pursuant to 326 IAC 3-5-7.
- (c) Pursuant to 40 CFR 60.47(d), the Permittee shall install, calibrate, certify and operate continuous emissions monitors for carbon dioxide or oxygen at each location where nitrogen oxide emissions are monitored.

#### **Record Keeping and Reporting Requirements [326 IAC 2-5.1-3(e)(2)] [326 IAC 2-6.1-5(a)(2)]**

##### **D.2.19 Record Keeping Requirements**

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- (a) To document compliance with Conditions D.2.2, D.2.5 through D.2.8, and D.2.11, the Permittee shall maintain records of the following:
  - (1) Amount of natural gas combusted (in MMCF) per turbine during each month.
  - (2) Percent sulfur of the natural gas.
  - (3) Heat input on a lower heating value basis of each turbine on a 30-day rolling average.
- (b) To document compliance with Condition D.2.5, the Permittee shall maintain records of the following:
  - (1) The type of operation (i.e. startup or shutdown) with supporting operational data
  - (2) The total number of minutes for startup or shutdown per 24-hour averaging period per turbine
  - (3) The CEMS data, fuel flow meter data, and Method 19 calculations corresponding to each startup and shutdown period.
- (c) To document compliance with Conditions D.2.6 and D.2.7, the Permittee shall maintain

records of the emission rates of NO<sub>x</sub> and CO in pounds per hour and parts per million (ppmvd) corrected to 15% oxygen.

- (d) To document compliance with Condition D.2.18, the Permittee shall maintain records, including raw data of all monitoring data and supporting information, for a minimum of five (5) years from the date described in 326 IAC 3-5-7(a). The records shall include the information described in 326 IAC 3-5-7(b).
- (e) To document compliance with D.2.10, the Permittee shall maintain records of the natural gas analyses, including the sulfur and nitrogen content of the gas, for a period of three (3) years.
- (f) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

#### D.2.20 Reporting Requirements

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The Permittee shall submit the following information on a quarterly basis:

- (a) Records of excess NO<sub>x</sub> and CO emissions (defined in 326 IAC 3-5-7 and 40 CFR Part 60.7) from the continuous emissions monitoring system. These reports shall be submitted within thirty (30) calendar days following the end of each calendar quarter and in accordance with Section C – General Reporting Requirements of this permit.
- (b) The Permittee shall report periods of excess emissions, as required by 40 CFR 60.334(c)
- (c) A quarterly summary of the CEMs data to document compliance with D.2.6, and D.2.7 shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, within thirty (30) days after the end of the quarter being reported.
- (d) A quarterly summary of the total number of startup and shutdown hours of operation and corresponding startup and shutdown emissions to document compliance with Condition D.2.5, shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, within thirty (30) days after the end of the quarter being reported.

## **SECTION D.3 FACILITY CONDITIONS – Natural Gas Conditioning Heaters**

### **Facility Description [326 IAC 2-5.1-3]**

Five (5) natural gas conditioning heaters, designated NGCH1, NGCH2, NGCH3, NGCH4, NGCH5 with a maximum heat input capacity of 5 MMBtu/hr (per unit on a higher heating value basis), and exhausts to stacks E7, E8, E9, E10, E11 respectively.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

## **Emission Limitations and Standards**

### **D.3.1 Opacity Limitations**

Pursuant to 326 IAC 5-1-2, the Permittee shall not cause the average opacity of the gas heater stacks to exceed twenty percent (20%) in any one (1) six (6) minute period. The opacity standards apply at all times, except during periods of startup, shutdown, or malfunction.

### **D.3.2 Best Available Control Technology for the Natural Gas Conditioning Heaters:**

Pursuant to 326 IAC 2-2 (PSD Requirement), the source shall comply with the following:

- (a) Use natural gas as the only fuel for the gas heaters.
- (b) Perform good combustion practices.
- (c) The combined natural gas usage from the five (5) natural gas conditioning heaters shall not exceed 144.8 MMSCF per year, based on a twelve (12) consecutive month period.

## **Record Keeping and Reporting Requirements [326 IAC 2-5.1-3(e)(2)] [326 IAC 2-6.1-5(a)(2)]**

### **D.3.3 Record Keeping Requirements**

- (a) To document compliance with Conditions D.3.2, the Permittee shall maintain records of the amount of natural gas combusted by the Natural Gas Conditioning Heaters during each month.
- (b) All records shall be maintained in accordance with Section C – General Record Keeping Requirements.

### **D.3.4 Reporting Requirements**

The Permittee shall submit on a quarterly basis a summary of the information to document compliance with Condition D.3.2 to the addresses listed in Section C - General Reporting Requirements, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported.

## **SECTION D.4 FACILITY CONDITIONS – Backup Equipment**

- (a) Two (2) diesel fire pumps, with a rating of 267 horsepower (hp).
  - (b) Two (2) diesel emergency generators, with a rating of 1,475 horsepower (hp).
- (The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### **Emission Limitations and Standards**

#### **D.4.1 BACT Limitation for Fire Pumps**

Pursuant to 326 IAC 2-2 (PSD Requirements) the two (2) diesel fire pumps shall comply with the following:

- (a) The total input of the fire pumps shall be limited to 6,569 gallons per twelve (12) consecutive month period, rolled on a monthly basis.
- (b) The sulfur content of the diesel fuel used by the fire pump shall not exceed 0.05 percent by weight.
- (c) Perform good combustion practice.

#### **D.4.2 BACT Limitation for Emergency Generators**

Pursuant to 326 IAC 2-2 (PSD Requirements) the two (2) emergency generators shall comply with the following:

- (a) The total input of the fire pumps shall be limited to 37,847 gallons per twelve (12) consecutive month period, rolled on a monthly basis.
- (b) The sulfur content of the diesel fuel used by the fire pump shall not exceed 0.05 percent by weight.
- (c) Perform good combustion practice.

### **Compliance Determination Requirements**

#### **D.4.3 Performance Testing**

The Permittee is not required to test these emissions units by this permit. However, IDEM may require compliance testing when necessary to determine if the emissions unit is in compliance. If testing is required by IDEM or VCAPC, compliance shall be determined by a performance test conducted in accordance with Section C - Performance Testing.

### **Record Keeping and Reporting Requirements [326 IAC 2-5.1-3(e)(2)] [ 326 IAC 2-6.1-5(a)(2)]**

#### **D.4.4 Record Keeping Requirements**

To document compliance with Conditions D.4.1 and D.4.2, the Permittee shall maintain records of the following:

- (1) Amount of diesel fuel combusted each month in the two (2) fire pumps.
- (2) Amount of diesel fuel combusted each month in the two (2) emergency generators.
- (3) The percent sulfur content of the diesel fuel.

#### D.4.5 Reporting Requirements

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A quarterly summary of the information to document compliance with D.4.1 and D.4.2 shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported.

## MALFUNCTION REPORT

### INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF AIR QUALITY FAX NUMBER - 317 233-5967

**This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6  
and to qualify for the exemption under 326 IAC 1-6-4.**

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE IT HAS POTENTIAL TO EMIT 25 LBS/HR PARTICULATE MATTER ?\_\_\_\_\_, 100 LBS/HR VOC ?\_\_\_\_\_, 100 LBS/HR SULFUR DIOXIDE ?\_\_\_\_\_, OR 2000 LBS/HR OF ANY OTHER POLLUTANT ?\_\_\_\_\_. EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION \_\_\_\_\_.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC \_\_\_\_\_ OR, PERMIT CONDITION # \_\_\_\_\_ AND/OR PERMIT LIMIT OF \_\_\_\_\_

THIS INCIDENT MEETS THE DEFINITION OF 'MALFUNCTION' AS LISTED ON REVERSE SIDE ?    Y        N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ?    Y        N

COMPANY: \_\_\_\_\_ PHONE NO. ( \_\_\_\_\_ ) \_\_\_\_\_

LOCATION: (CITY AND COUNTY) \_\_\_\_\_

PERMIT NO. \_\_\_\_\_ AFS PLANT ID: \_\_\_\_\_ AFS POINT ID: \_\_\_\_\_

INSP: \_\_\_\_\_

CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON: \_\_\_\_\_

DATE/TIME MALFUNCTION STARTED: \_\_\_\_/\_\_\_\_/20\_\_\_\_ \_\_\_\_\_ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION: \_\_\_\_\_

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE \_\_\_\_/\_\_\_\_/20\_\_\_\_ \_\_\_\_\_ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO<sub>2</sub>, VOC, OTHER: \_\_\_\_\_

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: \_\_\_\_\_

MEASURES TAKEN TO MINIMIZE EMISSIONS: \_\_\_\_\_

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL\* SERVICES: \_\_\_\_\_

CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS: \_\_\_\_\_

CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT: \_\_\_\_\_

INTERIM CONTROL MEASURES: (IF APPLICABLE) \_\_\_\_\_

MALFUNCTION REPORTED BY: \_\_\_\_\_ TITLE: \_\_\_\_\_  
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

**Please note - This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.**

### **326 IAC 1-6-1 Applicability of rule**

Sec. 1. This rule applies to the owner or operator of any facility required to obtain a permit under 326 IAC 2-5.1 or 326 IAC 2-6.1.

### **326 IAC 1-2-39 "Malfunction" definition**

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner.

**\*Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

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**Indiana Department of Environmental Management  
Office of Air Quality  
Compliance Data Section and Vigo County Air Pollution Control**

**Quarterly Report**

Company Name: Mirant Sugar Creek LLC  
Location: 5900 Darwin Road, West Terre Haute, IN 47885  
Permit No.: CP-167-15295-00123  
Source: Natural Gas Conditioning Heaters (five (5) units)  
Limit: 144.8 MMCF per twelve (12) consecutive month period

**Year:** \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + 2
	This Month	Previous 11 months	12 Month Total

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_



**Indiana Department of Environmental Management  
Office of Air Quality  
Compliance Data Section and Vigo County Air Pollution Control**

**Quarterly Report**

Company Name: Mirant Sugar Creek LLC  
Location: 5900 Darwin Road, West Terre Haute, IN 47885  
Permit No.: CP-167-12208-00123  
Source: Two (2) emergency diesel fire pump  
Limit: 6,569 gallons per twelve (12) consecutive month period

**Year:** \_\_\_\_\_

Month	Diesel Fuel Oil Usage (gallons/month)	Diesel Fuel Oil Usage for previous month(s) (gallons)	Diesel Fuel Oil Usage for twelve month period (gallons)

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Indiana Department of Environmental Management  
Office of Air Quality  
Compliance Data Section and Vigo County Air Pollution Control**

**Quarterly Report**

Company Name: Mirant Sugar Creek LLC  
Location: 5900 Darwin Road, West Terre Haute, IN 47885  
Permit No.: CP-167-12208-00123  
Source: Two (2) emergency generators  
Limit: 37,847 gallons per twelve (12) consecutive month period

**Year:** \_\_\_\_\_

Month	Diesel Fuel Oil Usage (gallons/month)	Diesel Fuel Oil Usage for previous month(s) (gallons)	Diesel Fuel Oil Usage for twelve month period (gallons)

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Indiana Department of Environmental Management  
Office of Air Quality  
Compliance Data Section and Vigo County Air Pollution Control**

**Quarterly Report**

Company Name: Mirant Sugar Creek LLC  
Location: 5900 Darwin Road, West Terre Haute, IN 47885  
Permit No.: CP-167-12208-00123  
Source: Four (4) natural gas combustion turbines operating in simple cycle  
Limit: Two (2) hours per startup, and 250 hours per year for startups. Two (2) hours per shutdown, and 42 hours per year for shutdowns.

Month: \_\_\_\_\_ Year: \_\_\_\_\_  
Total hours from previous month(s) startup \_\_\_\_\_ shutdown \_\_\_\_\_  
Total hours per year for startup and shutdown for 12 month period \_\_\_\_\_

Day/ Turbine	Startup				Shutdown				Day/ Turbine	Startup				Shutdown			
	1	2	3	4	1	2	3	4		1	2	3	4	1	2	3	4
1									17								
2									18								
3									19								
4									20								
5									21								
6									22								
7									23								
8									24								
9									25								
10									26								
11									27								
12									28								
13									29								
14									30								
15									31								
16									Total								

? No deviation occurred in this month      ? Deviation/s occurred in this month.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title/Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Indiana Department of Environmental Management  
Office of Air Quality  
Compliance Data Section and Vigo County Air Pollution Control**

**Quarterly Report**

Company Name: Mirant Sugar Creek LLC  
Location: 5900 Darwin Road, West Terre Haute, IN 47885  
Permit No.: CP-167-12208-00123  
Source: Four (4) natural gas combustion turbines operating in combined cycle, please copy and use separate form for each turbine  
Limit: 6.5 hours per event (where an event consists of one startup and one shutdown). The time period on annual basis for events not to exceed 583 hours per 12 consecutive month period in startups and shutdown mode with compliance demonstrated at the end of each month.

Year: \_\_\_\_\_  
Turbine ID: \_\_\_\_\_

Month	Column 1 hours during events this month	Column 2 hours during events during previous 11 months	Column 1 + Column 2 hours during events for twelve month period
	Hours	Hours	Hours

☐ No deviation occurred in this month      ☐ Deviation/s occurred in this month.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title/Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

## Indiana Department of Environmental Management Office of Air Quality

### Addendum to the Technical Support Document (TSD) for a Significant Modification to a Construction and Prevention of Significant Deterioration (PSD) Permit

#### Source Description and Amendment Request

Source Name:	Mirant Sugar Creek LLC
Source Location:	5900 Darwin Road, West Terre Haute, IN 47885
County:	Vigo
SIC Code:	4911
Permit No.:	CP-167-12208-00123
Permit Issuance Date:	May 09, 2001
Significant Modification No.:	167-17117-00123
Permit Reviewer:	Gurinder Saini

On February 16, 2003, the Office of Air Quality (OAQ) had a notice published in the Tribune Star, Terra Haute, Indiana, stating that Mirant Sugar Creek LLC, had applied for revision of the Construction Permit issued on May 09, 2001. The Permittee requested for streamlining the startup and shutdown BACT limitations in the permit and revise the performance testing condition. In addition a request to clarify the intent of the particulate matter (PM) / particulate matter less than 10 micron in diameter (PM-10) limitations in the permit. The public notice also stated that OAQ proposed to issue the PSD approval for this operation and provided information on how the public could review the proposed approval and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on the draft permit.

#### Changes by IDEM, OAQ

On March 3, 2003, U.S.EPA published a notice for "Conditional Approval of Implementation Plan: Indiana" in the Federal Register / Vol. 68, No.41 at pages 9892 through 9895. This notice grants conditional approval to the PSD State Implementation Plan (SIP) under provisions of 40 CFR §51.166 and 40 CFR §52.770 while superceding the delegated PSD SIP authority under 40 CFR §52.793. The effective date for these provisions is April 2, 2003. Therefore, the condition 3 in the General Conditions in the draft cover letter for permit documents is revised based on the PSD SIP approval status at the time as follows (where language deleted is shown with strikeout and that added is shown in bold):

3. Effective Date of the Permit

~~Pursuant to 40 CFR 124.15, 40 CFR 124.19, and 40 CFR 124.20, this permit becomes effective upon its issuance, if no comments are received during the comment period for this permit.~~

~~or~~

~~Pursuant to 40 CFR 124.15, 40 CFR 124.19, and 40 CFR 124.20, the effective date of this permit will be thirty (30) days after the service of notice of the decision, if comments are received during the public comment period for this permit. Three (3) days shall be added to the thirty (30) day period if service of notice is by mail.~~

**Pursuant to IC 13-15-5-3, this permit modification becomes effective upon its issuance. Pursuant to 326 IAC 2-2 (Prevention of Significant Deterioration), 326 IAC 2-1.1-6 (Public Notice), IC 4-21.5-3-7 (Review; Petition; Denial of Petition; Preliminary Hearing) and IC 13-15-6 (Appeal of Agency Determination to Issue or Deny Permit) this approval**

**can be appealed as specified in these provisions.**

The condition B.3 and the cover page of the modified permit maintain the references to the 40 CFR §52.21 and 40 CFR 124. These references are retained because the original construction permit CP 167-12208-00123 was issued pursuant to these provisions. The applicable similar provisions for this modification are listed in the cover letter accompanying this permit modification approval.

**Comments by Stephen A. Loeschner**

Written comments were received from Mr. Stephen A. Loeschner of Fort Wayne, Indiana, on March 11, 2003. These comments and IDEM, OAQ responses, including changes to the permit (where language deleted is shown with ~~strikeout~~ and that added is shown in **bold**) are as follows:

**General Comments**

This is comment on a draft Prevention of Significant Deterioration ("PSD") permit modification for Mirant Sugar Creek L.L.C. in Vigo County, Indiana ("Mirant") described in Indiana Department of Environmental Management and Vigo County Air Pollution Control ("DEM") draft permit document package 167-17117-00123 ("17117") for changes in the terms of the PSD construction and operating permit within the DEM document package 167-15295-00149 ("15295"), which, itself was a modification of the PSD permit within the DEM document package 167-12208-00123 ("12208")<sup>1</sup>

**Background**

Mirant is one of the specific 42 USC 7479(1) listed sources, and it has the potential to emit 100+ tons per year ("tpy") each of carbon monoxide ("CO") and mixed nitrogen oxides expressed as a nitrogen dioxide equivalent ("NO<sub>x</sub>"). The 12208 draft was exposed for public comment on or about 28 March 2001. Apparently no comment was received, and Permit 12208 was issued on or about 9 May 2001. Amendments draft 15295 was exposed for public comment on or about 13 June 2002. Apparently no comment was received, and permit 15295 was issued on or about 24 July 2002.

**Comment 1:**

**Startup time limitation**

12208 Condition D.2.5(a) and 15295 Condition D.2.5(a) have identically binding text: "Each startup ... shall not exceed four (4) hours. Each turbine shall not exceed 500 hours per year for startups[.]"

In 17117 Condition D.2.5(c), Dem proposes to extend that limitation to an unspecified value that could conceivably be as much as 6.4 hours. That amendment, indeed all of the 17117 amendments, must be rejected as an unlawful disparagement of CO and NO<sub>x</sub> 42 USC 7479(3) Best available Control Technology ("BACT").

Mirant willingly and knowingly accepted the terms of 12208 on or about 9 June 2001 if there were changes from the 12208 draft in the issued permit. If there were no changes, then Mirant's acceptance was on or about 28 April 2001 when Mirant elected to not comment on the 12208 draft.

Mirant willingly and knowingly accepted the terms of 15295 on or about 24 August 2002 if there were changes from the 15295 draft in the issued permit. If there were no changes, then Mirant's

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<sup>1</sup> See <ftp://ftp2.ai.org/pub/idem/oam/17117d.pdf> as published on or about 12 February 2003, <ftp://ftp2.ai.org/pub/idem/oam/15295f.pdf> as published on or about 24 July 2002, and <ftp://ftp2.ai.org/pub/idem/oam/12208f.pdf> as published on or about 9 May 2001, all incorporated herein in their entirety by reference.

acceptance was on or about 13 July 2002 when Mirant elected to not comment on the 15295 draft.

Mirant is presumed to have employed counsel that advised it of the 40 CFR 124.13 "All persons, *including applicants ...*" (emphasis added) comment option and timeliness obligation.

So, with 15295, Mirant managed to have its auxiliary boilers removed from the source. However, the entire group of 12208 D.2.5 conditions were properly preserved within 15295 (and Mirant did not object).

BACT is required during times of turbine startup and shutdown operation, and this is included within Appendix C to the 12208 Technical Support Document. The 15295/12208 D.5 conditions are a part of CO and NO<sub>x</sub> BACT. Further, the (absent) auxiliary boilers are pollution control equipment ("PCE"):

"The purpose of the auxiliary boilers are to ... prevent lengthy cold startups reducing the increased emissions associated with startup conditions."

12208 TSD Appendix C p. 22

While BACT is economic, Mirant cannot now claim any economic hardship whatsoever in re any inability to accomplish the coldest of startups compliant with the 4-hour 12208 D.2.5(a) condition, nor can, absent a technical showing, Mirant claim any inability to comply with all of the existing 15295/12208 D.2.5 conditions.

When Mirant consciously elected to not install auxiliary boilers as PCE that were obviously budgeted from day-1, it fully re-acknowledged and accepted its responsibility to comply with all permit conditions as if that PCE had been installed.

Mirant must remain bound by the existing 15295/12208 D.2.5 conditions that are a codification of the original 12208 CO and NO<sub>x</sub> BACT determinations.

Are 1117 and 12208 BACT's equivalent?

Mirant and or DEM may argue that the preservation of the 82.5 tpy CO and 64.9 tpy NO<sub>x</sub> per turbine for startup and shutdown plus the amendment of 500 hours of startup and 83 hours of shutdown to 583 hours of un-fractionated startup and shutdown results in an equivalence between 1117 and 12208. That argument must be soundly rejected, as BACT is to apply to the methods of operation—it is not just to be a *carte blanche* annual limit.

There are very valid environmental reasons why accomplishing startups in minimal time is beneficial. It is these times when the NO<sub>x</sub> control catalyst is cold and ineffective, and it is these times when very little valuable electrical energy is being produced per unit fuel. 17117 and 12208 BACT's are not equivalent. And DEM did not reargue or reaffirm BACT within 17117.

#### **Response 1:**

The commentator's observation about the fact that Mirant did not chose to comment either on construction permit no.167-12208-00123 or modification of the CP no. 167-15295-00123, are not relevant to this significant modification. There is nothing in the regulation that prohibits the Permittee from making changes to plant or otherwise requesting changes to the permit conditions. The purpose of IDEM, OAQ approval is to assure that these changes are in accordance with the applicable Federal and State regulations and do comply or will comply with the same. The commentator has failed to show how this change or the previous change to remove auxiliary boilers (which were never built) from the plant equipment list violate or could possibly violate any regulatory requirements.

The installation and use of auxiliary boilers at a combined cycle combustion turbine based power plant is not as part of pollution control equipment or strategy. Rather the auxiliary boilers are optional pieces of equipment, which may or may not be incorporated in to the design of the power plant. These boilers serve following purposes:

1. Steam sparging of condensed water in the Heat Recovery Steam Generator (HRSG) to remove dissolved air thus preventing corrosion in the system;
2. Supply sealing steam to steam turbine glands to allow vacuum to be maintained during shutdowns;
3. Pre-warm the HRSG tubes and drums to expedite the cold startup, which allows for a quicker dispatch of output load.

The applicant may elect to install auxiliary boilers to serve any one or all or any combination thereof of the above functions. For example, depending upon the configuration of the boiler system it may supply the sealing steam to the steam turbine, but may or may not be used to pre-warm the steam tubes and drums in the HRSG.

The third item in the list above may have an additional impact of reducing emissions during the cold startup. The startup of a combined cycle combustion turbine is a complicated sequence of events. Broadly the combustion turbine is held in a part load condition, while the HRSG is being heated from a cold state to operating condition. Once the HRSG reaches the operating temperature, the load on the turbines is ramped up to operating load under normal operation. A quicker startup due to the use of auxiliary boiler may shorten the heating period required for the HRSG, and may reduce the time period for ramping up to normal operation load.

The applicant has to weigh in project objectives and cost-benefit ratios to decide whether the auxiliary boilers should be installed or not. The cost factors include initial costs and more importantly operational and maintenance costs for these systems. Also the auxiliary boiler equipped systems require additional ductwork and complications of operation which may not be desirable by all applicants. In terms of the project objectives, the most significant factor will be the type of market demand the power plant proposes to cater to. A more or less peaking kind of operation may require the applicant to design the equipment to have quick dispatch of the load. All these factors can impact the choice whether auxiliary boilers are proposed as part of a combined cycle combustion turbine based power plant.

The process of permit application and approvals are started at an early stage in the project development. All details of project are not finalized at that time about the detailed engineering of the project. The applicant has in a communication on March 24, 2003 stated that, the two 35 MMBtu/hr each natural gas-fired boilers were included in the April/May 2000 PSD permit application documents, in the event subsequent engineering design of the plant determined that these units presented operational benefits, that outweighed their costs. During the first half of 2002, prior to the start of construction of combined cycle combustion turbine units, Permittee and the EPC contractor decided that auxiliary boilers did not present significant operational benefits to the project and therefore would not be installed.

The IDEM, OAQ determined that the installations of auxiliary boilers formed the part of the project design as proposed by the applicant. The U.S.EPA policy stated in the New Source Review, Workshop Manual<sup>1</sup> (Draft) (WM) the approach to be taken for 'redefining' a project. It states that, "Historically, **EPA has not considered the BACT requirement as a means to redefine the design of the source when considering available control alternatives.** For example, applicants proposing to construct a coal-fired electric generator, have not been required by EPA

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<sup>1</sup> See page B.13 of "New Source Review Workshop Manual, Prevention of Significant Deterioration and Non-Attainment Area Permitting", by US EPA, Draft – October 1990.



as part of a BACT analysis to consider building a natural gas-fired electric turbine although the turbine may be inherently less polluting per unit product (in this case electricity). However, this is an aspect of the PSD permitting process in which **states have the discretion** to engage in a broader analysis if they so desire. Thus, a gas turbine normally would not be included in the list of control alternatives for a coal-fired boiler. However, there may be instances where, in the permit authority's judgment, the consideration of alternative production processes is warranted and appropriate for consideration in the BACT analysis. A production process is defined in terms of its physical and chemical unit operations used to produce the desired product from a specified set of raw materials. In such cases, the permit agency may require the applicant to include the inherently lower-polluting process in the list of BACT candidates. [emphasis added]"

The Environmental Appeals Board (EAB) (the appellate authority for PSD decisions issued by U.S.EPA and delegated states) has stated in a decision for Ogden Martin Systems<sup>1</sup>, that, "An important limitation ... is that EPA's PSD regulations do not permit EPA, or require a State permitting authority, to redefine the source in order to reduce emissions. *In re Hawaiian Commercial & Sugar Company*, PSD Appeal No. 92-1, at 6-7 (EAB, July 20, 1992); *In re Pennsauken County, New Jersey Resource Recovery Facility (Remand Order)*, PSD Appeal No. 88-8, at 10-11 (Adm'r, Nov. 10, 1988)..."

In another similar opinion the EAB stated in a decision for Hawaiian Commercial and Sugar Company<sup>2</sup>, (HC&S) that, "EPA's **PSD permit conditions regulations do not mandate** that the permitting authority **redefine the source in order to reduce emissions**. [emphasis added]" Further in this opinion EAB cites the text from the WM on page B.13 as described above. In the footnote No.9 for this text it states that, "...[T]he State determined that requiring a coal-fired steam electric generating station to use natural gas as an alternative fuel would **redefine** the source. It further concluded that it was **not empowered to do this unless the facility as proposed would not meet all Federal and State air emission limitations or would result in a violation of a national ambient air quality standard**. While the Administrator of **EPA found no clear error** in the State's handling of the matter, he stated that 'EPA construes the 1990 Amendments as **conferring discretion** on the **permit issuer** to consider fuels other than those proposed by the permit applicant.' Id. at p. 25.[emphasis added]"

In the HC&S case, the Petitioner indicated that he is adamantly opposed to any additional coal fired boilers on Maui, suggesting that HC&S should instead install a combined cycle facility fueled with low sulfur distillate or residual oil and equipped with a selective catalytic reduction unit for NOx control. The EAB concluded that, "Petitioner's preference as to the type of boiler and fuel to be used in this instance would in effect **redefine the source**. The cited draft guidance makes clear that **the permitting authority is entitled to wide latitude in how broad a BACT analysis it wishes to conduct in this regard**. Petitioner has provided no good reason for curtailing this discretion here nor has he shown that the State abused this discretion. Thus, review of this issue is also denied.[emphasis added]"

In a memo<sup>3</sup> the U.S.EPA in one of the footnotes, clarified the impact of 1990 amendments to the Clean Air Act as, "In the past, EPA has taken the position that the BACT analysis should not provide commenters or petitioners an opportunity to 'redefine the source' by forcing the applicant to consider construction of a facility that is significantly different from the one proposed. See, e.g., Pennsauken Resource Recovery Facility, PSD Appeal No. 88-8 (Remand Order, Nov., 8, 1988) at 11. We note, however, that this position, while reasonable, is not compelled by the statute. PSD permitting authorities may, through the BACT provision or other aspects of PSD review, require

<sup>1</sup> See, EAB decision "In re Ogden Martin Systems Of Onondaga, Inc., ET AL., PSD Appeal No. 92-7 footnote 14 4 EAD 405, 411 (EAB, December 01, 1992)".

<sup>2</sup> See, EAB decision "In re Hawaiian Commercial & Sugar Company, PSD Appeal No. 92-1 (EAB, July20, 1992)".

<sup>3</sup> See page 4 footnote 5, in memorandum from Jeffrey B.Renton, Attorney, Air and Radiation Division, LE-132A, to William G. Rosenberg, Assistant Administrator of Air and Radiation ANR-443, US EPA in "Recent Administrative and Judicial Decisions Regarding Consideration of Source Separation in Determining Best Available control Technology Under PSD" May 21, 1992.

construction of a significantly different source or even deny the application altogether. For example, in the 1990 Amendments, Congress revised the statutory definition of BACT in section 169(3) of the Act to require consideration of 'clean fuels' as a pollution control technology. In addition, section 165(a)(2) provides that the public hearing held to consider a PSD permit must include an opportunity to make presentations on 'alternatives' to the proposed source. Also, the legislative history of the 1977 Amendments asserts that Congress intended to give states broad flexibility to condition a PSD permit according to local desires, and may deny the permit if it could alter the character of the community. See S. Rep. No. 95-127, 95th Cong., 1st Sess. 31 (1977)."

Therefore, based on above review, IDEM, OAQ has in effect tried to conform with the EAB's thought process and EPA's guidance, and **does not believe it has the authority to influence the basic design of the project**. Rather, IDEM, OAQ makes every effort to draft permit documents, which would allow the Source to comply with applicable Federal and State regulations and do not cause or contribute to the National Ambient Air Quality Standards violations.

IDEM, OAQ does not believe that the auxiliary boilers constitute BACT for the combined cycle combustion turbines. There are no other known determinations of this kind by other State and Federal agencies for this type of projects. During the review of similar sources both in RACT/BACT/LAER clearinghouse or otherwise known to IDEM, OAQ the requirement to install auxiliary boilers to reduce emissions during startup was never observed. In fact over the years, IDEM has permitted both kind of combined cycle combustion turbine based power plants, some using the auxiliary boilers and others without the same. Therefore, IDEM, OAQ feels that it is beyond its jurisdiction and rather dependent upon the market demand for the electricity, whether an applicant for power plant should elect to use auxiliary boilers or not.

The commentator's objection to the preservation of annual limit only as not covering the requirement to apply BACT at all levels of operations is not correct. The draft permit contains multiple limitations for the Startup and Shutdown duration for the combined cycle combustion turbines as part of the BACT. These are:

1. The combined duration of one startup and one shutdown cannot exceed 6.5 hours.
2. On an annual basis the combustion turbine cannot exceed 583 hours in the startup and shutdown modes.
3. The NO<sub>x</sub> emissions from each combustion turbine stack shall not exceed 64.9 tons in 12 consecutive month period for startup and shutdown duration with compliance demonstrated at the end of each month.
4. Each combustion turbine shall not exceed 997 pounds of NO<sub>x</sub> emissions per event.
5. The CO emissions from each combustion turbine stack shall not exceed 82.5 tons in 12 consecutive month period for startup and shutdown duration with compliance demonstrated at the end of each month.
6. Each combustion turbine shall not exceed 2446 pounds of CO emissions per event.

IDEM, OAQ has determined that these limitations are:

1. consistent with other permits issued by the agency in recent past for similar operations;
2. are more elaborate than limitations proposed for similar sources located in other states; and
3. compliant with the EPA policy of requiring the use of BACT at all levels of operation of processes.

Therefore, no changes are required to any permit conditions.

**Comment 2:**

The 17117 TSD arguments in re variable flow are specious and diversionary. Please explain the technical process by which you could not average the concentrations of CO and NO<sub>x</sub> over a period (because of "large variations in the [volumetric] flow rate [per unit time] and pollutant concentrations during these time periods"), but that you could aggregate the pounds of pollutant over the same period at the same source with the same large variations in the volumetric flow rate per unit time and pollutant concentrations during these time periods.

It seems rather clear than an average of the concentrations over time should be much easier to obtain (and with a greater degree of confidence—given that volume of flow per unit of time is not needed), than an average of pounds over time in which volume of flow per unit of time is needed.

It is clear that Mirant has little interest in getting out of the 80 parts per million by volume on a dry basis @ 15% diatomic molecular oxygen ("O<sub>2</sub>") (standardized, "ppms") NO<sub>x</sub> average over the entire startup period or the 150 ppms CO average over the entire startup period limits. Mirant is principally interested in being freed from the 4-hour startup time limit. And Mirant, by deleting PCE specifically designed into the unit to achieve that limit, has created its own problem. Mirant is not entitled to any relaxation of NO<sub>x</sub> or CO BACT as a result of its own decision.

**Response 2:**

The pollutant concentration based emissions limitations during the startup and shutdown are not a sound and practical approach for implementing the BACT requirements. Depending upon the type of continuous emissions monitoring system used by the Permittee, there would be a large number of data points for pollutant concentrations as the turbine is ramped up. Further, there are little in terms of control technologies other than work practices, which can minimize emissions during this period. The IDEM's discussion in the TSD about variations in the flow rate and pollutant concentrations during the ramp up in a startup is accurate.

In the earlier version of the permit the Permittee is allowed to average pollutant concentrations observed during the startup and to show whether it was below the permit limit. The pollutant concentrations vary significantly as the turbines are ramped up. A large spike in the concentration during the initial stage can potentially result in non-compliance with the limit even though the actual emissions were quite low, when the data points are averaged over the entire duration. In addition, there are limited options (other than shutting down the turbine and go through a restart), that a Permittee can exercise to reduce the pollutant concentration subsequent to the spike to average out the emissions over the startup period. This would be overly restrictive and undesirable nature of operation for this turbine and is environmentally detrimental in terms of waste of resources. On the other hand with minimal load on the turbine, during the startup mode, the pollutant concentration could be quite high but due to low exhaust gas flow rate, the actual mass of emissions would be low.

Therefore, IDEM, OAQ established that the best approach is to aggregate the total mass of emissions over the entire period of startup and limit it as part of the BACT determination. This allows the Permittee flexibility to startup even if it faces tripping or spiking during startup and also minimizes the total mass of emissions during the period so that air quality in the region is not impacted. This approach is consistent with type of limitations set by IDEM, OAQ in the permits for similar operations located in the State in the recent past, and has also been observed in permits issued in the State of California at least. Most other States do not even specify any emissions limitation for startup/shutdown duration.

No changes are made to any permit conditions.

**Comment 3:**

### **50 - 70% operating range**

During a startup with intent to achieve something near 100% operation, 15295/12208 Condition D.2.6(a)(1) limits NO<sub>x</sub> concentration to 3.0 ppms averaged over 3 hours when operating at 50% or greater. Mirant has the privilege of emitting any concentration of NO<sub>x</sub> at 51%, as the 15295/12208 Condition D.2.5(b) 80 ppms maximum limit is inapplicable, so long as the concentration measurements for the first, through the last within the 3-hour period, where the first measurement included in the average is the first recorded when the power first was at 50% or more, average no more than 3.0 ppms.

17117 would increase that so as to allow Mirant the privilege of emitting any concentration of NO<sub>x</sub> at 71%, as the 15295/12208 Condition D.2.5(b) 80 ppms maximum limit is inapplicable, so long as the concentration measurements for the first, through the last within the 3-hour period, where the first measurement included in the average is the first recorded when the power first was at 70% or more, average no more than 3 ppms. This is obviously a disparagement of 12208 NO<sub>x</sub> BACT that is an abuse of discretion by DEM.

During a startup with intent to achieve something near 100% operation, 15295/12208 Condition D.2.7(a)(1) limits CO concentration to 9.0 ppms averaged over *an insane* 24-hours when operating at 50% or greater. Mirant has the privilege of emitting any concentration of CO at 51%, as the 15295/12208 Condition D.2.5(c) 150 ppms maximum limit is inapplicable, so long as the concentration measurements for the first, through the last within the 24-hour period, where the first measurement included in the average is the first recorded when the power first was at 50% or more, average no more than 9.0 ppms.

17117 would increase that so as to allow Mirant the privilege of emitting any concentration of CO at 71%, as the 15295/12208 Condition D.2.5(b) 80 150 maximum limit is inapplicable, so long as the concentration measurements for the first, through the last within the 24-hour period, where the first measurement included in the average is the first recorded when the power first was at 70% or more, average no more than 9.0 ppms. This is obviously a disparagement of 12208 CO BACT that is an abuse of discretion by DEM.

### **Response 3:**

This aspect has been discussed in detail in the TSD for the draft permit. The IDEM, OAQ in consultation with the Permittee, established the revised startup benchmark for the operation (at 70% load or other conditions as mentioned). This benchmark closely reflects the site-specific operational practices observed at similar facilities in the region operated by the Permittee or by other operators. There is no disparagement of BACT for NO<sub>x</sub> and CO because there are separate applicable BACT limitations during the startup and shutdown mode. Once the turbine reaches the normal operation, then it has the capability to minimize emissions using the BACT to meet the applicable limitations during the normal operation.

Therefore, no changes are required to any permit conditions.

### **Comment 4:**

#### **URL's**

Provide all of the GE URL's that were used to found the 17117 package.

### **Summary**

Tampering with the 15295/12208 Condition D.2.6(a)(1) 3.0 ppms NO<sub>x</sub> concentration limit and or the 15295/12208 Condition D.2.7(a)(1) 9.0 ppms CO concentration limit by removing those limits

for operation in the range of 50 - 69.99% power would be environmentally destructive, would be destructive of 12208 NO<sub>x</sub> and CO BACT, and would permit a greater emission per unit fuel in that range of inefficient operation.

Tampering with the 15295/12208 Condition D.2.5(a) "Each startup period shall not exceed 4 hours." limit by extending the permissible period of inefficient operation would be environmentally destructive and would be destructive of 12208 NO<sub>x</sub> and CO BACT.

Tampering with the 15295/12208 NO<sub>x</sub> Condition D.2.5(b) 80 ppms concentration limit and or tampering with the 15295/12208 CO Condition D.2.5(c) 150 ppms concentration limit by changing the concentration limits to "unlimited" would be environmentally destructive, would be destructive of 12208 NO<sub>x</sub> and CO BACT.

17117 should simply not be issued. If Mirant, sans auxiliary boiler PCE, elects to perform cold starts in ambient severe cold weather, such that it violates the 15295/12208 permit conditions, then Mirant should expect to pay the full penalty for having freely elected to abandon the PCE.

#### Response 4:

The URL for the GE document used in the TSD for the draft permit is:

[http://www.gepower.com/dhtml/publications/en\\_us/index.jsp/](http://www.gepower.com/dhtml/publications/en_us/index.jsp/)

The other items in this comment are a summarization of the previous comments. Therefore, no further discussion is required for these.

#### Comments by Mirant Corporation

On March 18, 2003, Laszlo F. Hary of Mirant Corporation submitted comments on the draft modification 167-17117-00123. These comments and IDEM, OAQ responses to the same are presented in the following pages. The permit changes where texts deleted are shown with a strikeout and that added are shown in bold are as follows:

#### Comment 1:

The only comment that Mirant has is on the proposed language of new permit Condition D.2.16 (b). Since Mirant will not have the capability to measure SCR catalyst bed temperature, but will have the ability to measure flue gas temperature upstream of the SCR, we suggest that the language of permit Condition D.2.16 (b) be revised as follows:

From the date of the valid stack test, during a startup, the Permittee shall measure and record the SCR inlet flue gas temperature and start ammonia injection in the SCR units to control NO<sub>x</sub> emissions from the gas turbines, as soon as the SCR inlet flue gas temperature reaches the temperature determined in part (a) above or turbine load reaches 70%, whichever occurs earlier.

#### Response 1:

The condition D.2.16 is revised as follows:

#### D.2.16 Oxides of Nitrogen NO<sub>x</sub> (SCR operation) [326 IAC 2-2]

- 
- (a) Pursuant to 326 IAC 2-2 (PSD requirements), the Permittee shall determine the lowest SCR inlet flue gas temperature during the stack test required in condition D.2.15 (a) **and** (c) that demonstrates compliance with limits in condition D.2.6, as approved by IDEM.
  - (b) From the date of the valid stack test, during a startup, the Permittee shall measure and record **the SCR inlet flue gas** temperature ~~of the catalyst bed~~ and start ammonia

injection in the SCR units to control NOx emissions from the gas turbines, as soon as the catalyst bed ~~SCR inlet flue gas temperature~~ reaches the temperature determined in part (a) above or turbine load reaches 70%, whichever occurs earlier.

## Indiana Department of Environmental Management Office of Air Quality

### Technical Support Document (TSD) for a Significant Modification to a Construction and PSD Permit.

#### Source Background and Description

Source Name:	Mirant Sugar Creek LLC
Source Location:	5900 Darwin Road, West Terre Haute, IN 47885
County:	Vigo
SIC Code:	4911
Permit No.:	CP-167-12208-00123
Permit Issuance Date:	May 09, 2001
Significant Modification No.:	167-17117-00123
Permit Reviewer:	Gurinder Saini

The Office of Air Quality (OAQ) received a modification application from Mirant Sugar Creek LLC on January 10, 2003 relating to the following, in their permit for the existing natural gas fired merchant power plant:

1. Streamline combined cycle combustion turbine startup and shutdown limitations.
2. Revise the performance testing conditions for the combined cycle units to avoid expensive and similar testing on identical units where testing has already been performed or will be performed in future.
3. Clarify the intent of particulate matter (PM) and particulate matter less than ten (10) micron size (PM10) limitations in the permit to indicate what components are included in each.

#### History

On January 10, 2003, Mirant Sugar Creek LLC submitted an application to the OAQ requesting to make changes to the construction permit CP 167-12208-00123 issued on May 09, 2001. Mirant has built a simple cycle combustion turbine based peaking power plant that will be converted to combined cycle operation in the future as approved by the permit CP 167-12208-00123. This modification request does not change the potential to emit as permitted in the original permit.

#### Proposed Changes

##### A. *Changes to the startup/shutdown condition D.2.5*

1. The construction permit CP 167-12208-00123 was one of the early permits issued by IDEM, OAQ for this kind of operation, and both the permit application and the permit itself was based on limited information about the startup and shutdown NO<sub>x</sub> and CO emissions from the combustion turbines. The permit also contains limited description of startup and shutdowns and emission limitations in the form of concentration of emissions in parts per million for NO<sub>x</sub> and CO emissions.

In discussions in recent past with other Permittees operating similar facilities, and review of actual information related to compliance monitoring in the field, it was observed that the

compliance with concentration based limits for NOx and CO during the startup and shut down is difficult. This difficulty is caused by the large variations in the flow rate and pollutant concentrations during these time periods. Therefore, the Permittee has requested to change these startup and shutdown concentration based emission limits to the mass based emission limit in the form of pounds per startup or shutdown. Rather than focussing on an average over a short period, this change totals the NOx and CO emissions over the entire duration of startup or shutdown. IDEM, OAQ has further established a term 'event' where an event consists of exactly one startup and exactly one shutdown.

IDEM, OAQ's recent experience with this type of operation has shown that the startup and shutdown limits in pounds per event are more appropriate and adequate to show compliance with BACT requirements and are included in most of the recent permits for similar operations.

2. The Permittee has requested to define the duration of startups and shutdowns more explicitly consistent with the recent permits issued by IDEM, OAQ for this type of process. The Permittee has presented information detailing the startup sequence and load conditions during a typical cold startup for the combined cycle combustion turbines. The present permit specifies operation at less than 50% load as the startup or shutdown duration for the combustion turbines. The Permittee has presented the actual field data that shows the variations in the turbine performance under the ambient conditions from the ISO conditions for similar model of turbines. In the available information<sup>1</sup> from GE power system website about the performance of GE 7 FA turbines, it is stated that, the turbine can reach 9 ppm outlet NOx concentration at 50% load under ISO conditions. As observed in the actual practice at various similar facilities, this is not entirely true for the combustion turbines in combined cycle mode. This is due to the presence of heat recovery steam generators (HRSG) to produce steam and the low ambient temperatures. These factors impact the fuel consumption and load versus NOx emissions concentration. That in turn affects the ability to comply with the BACT limit during the normal (steady state) operation. Therefore, under some circumstances the turbine may need to be ramped up to 70% load, to achieve normal operation and SCR inlet NOx concentration in the range of 9-12 ppm. This will control the outlet NOx concentration below 3.0 ppm @ 15% O<sub>2</sub>, the BACT level of control for NOx emissions under steady state conditions. Therefore, in this permit modification, the 'normal' operation is defined to have commenced when either the load on the turbine is greater than or equal to 70% or the outlet SCR NOx concentration is less than 3.0 ppm @ 15% O<sub>2</sub> on a 3 hour average basis whichever occurs earlier.
3. Adjust the time period allowed for the startup, where startup is assumed to be cold start (with more than 72 hours of time between startup and previous shutdown). The Permittee has requested to maintain the combined annual hours of startup and shutdown at 583 (500 hours of startup and 83 hours of shutdown as stated in the present permit). The present permit allows the Permittee duration of 4 hours for the startup and another 4 hours for the shutdown. This is inconsistent with the operational practices for the combined cycle operation and the present IDEM, OAQ policy for these processes. Therefore, to be consistent with the recent permits for similar processes and the ease of showing compliance with the applicable limits, IDEM, OAQ proposes to set a limit on 'duration of time for an event' where an event consists of one startup and one shutdown. This new limit is set in place of identifying time periods for individual startups and shutdowns. This provides greater flexibility of operation to the Permittee and ease of showing compliance with the applicable limits.

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<sup>1</sup> "Dry Low NOx Combustion Systems for GE Heavy-Duty Gas Turbines" by L.B.Davis and S.H.Black of GE Power Systems, GER-3568G, October 2000.



In addition, as part of additional information provided by the Permittee it was observed that due to the colder ambient temperature (when compared to ISO conditions) and other site-specific parameters, a startup could extend up to 5.5 hours in duration<sup>2</sup>. Therefore based on this information the event (consisting of one startup and one shutdown) will be allowed duration of up to 6.5 hours. The annual hours in the startup and shutdown mode remain unchanged at 583.

4. The combined cycle combustion turbine operation during the startup is specific to each plant. This is because the startup (especially the cold startup) is dependent upon many site-specific parameters like presence of auxiliary boilers to keep the HRSG's heated, the number of turbines in a power block and lowest ambient temperature prevalent in the area. These factors can influence the duration and amount of emissions during the startup (cold start) for the combined cycle combustion turbine. Being a site-specific parameter, the emissions and the duration at Mirant plant are not comparable to other sources.
5. In the present permit the NOx emissions limit during the startup is stated as 80 ppmvd corrected to 15% O2 and during shutdown it is 48 ppmvd corrected to 15% O2. These limitations will be replaced by a mass limit for the entire duration of event, where NOx emissions shall be limited to 997 pounds per event per turbine.
6. In the present permit the CO emission limit during the startup is stated as 150 ppmvd corrected to 15% O2 and during shutdown it is 90 ppmvd corrected to 15% O2. These limitations will be replaced by a mass limit for the entire duration of event, where CO emissions shall be limited to 2446 pounds per event per turbine.
7. Both the NOx and CO emissions limits are based on actual operational data presented by the Permittee for the sister facility using similar turbines in Michigan located in Zeeland.
8. A clarification is added that the annual limitations are on a 12 consecutive month period basis where the compliance is demonstrated at end of the each month.

The condition D.2.5 of the permit is revised as follows:

#### D.2.5 Startup and Shutdown Limitations for Combustion Turbines

Pursuant to 326 IAC 2-2 (PSD Requirements), **following applies to each combustion turbine:**

- (a) **A startup is defined as the operation in the period of time from the initiation of combustion until the turbine reaches a minimum load of seventy (70) percent or instantaneous outlet SCR NOx concentration reaches level less than 3.0 ppm at 15% O2 whichever occurs earlier.**
- (b) **A ~~or~~ shutdown is defined as operation at less than fifty (50) percent load descending to flame out. ~~Each combustion turbine generating unit shall comply with the following:~~**
- (c) **An event is defined as exactly one (1) startup and exactly one (1) shutdown and shall not exceed six and five-tenth (6.5) hours.**
- (d) **Each turbine shall not exceed 583 hours in 12 consecutive month period in startup and shutdown mode with compliance demonstrated at the end of each month.**
- (e) **The NO<sub>x</sub> emissions from each combustion turbine stack shall not exceed 64.9 tons in 12 consecutive month period for startup and shutdown duration with**

<sup>2</sup> Information provided by Mirant Corporation on January 22, 2003 to IDEM, OAQ about the Zeeland Generating Facility in Zeeland Michigan.

**compliance demonstrated at the end of each month. Each combustion turbine shall not exceed 997 pounds of NO<sub>x</sub> emissions per event.**

- (f) The CO emissions from each combustion turbine stack shall not exceed 82.5 tons in 12 consecutive month period for startup and shutdown duration with compliance demonstrated at the end of each month. Each combustion turbine shall not exceed 2446 pounds of CO emissions per event.**

- ~~(a) Each startup or shutdown period shall not exceed four (4) hours. Each turbine shall not exceed 500 hours per year for startups and 83 hours per year for shutdowns.~~
- ~~(b) The NO<sub>x</sub> emissions from each combustion turbine stack shall not exceed 64.9 tons per year for startup and shutdown emissions. Each combustion turbine shall not exceed 80 ppmvd corrected to 15% O<sub>2</sub> during startup, and 48 ppmvd corrected to 15% O<sub>2</sub> shutdown, averaged over the duration of the startup or shutdown.~~
- ~~(c) The CO emissions from each combustion turbine stack shall not exceed 82.5 tons per year for startup and shutdown emissions. Each combustion turbine shall not exceed 150 ppmvd corrected to 15% O<sub>2</sub> during startup, and 90 ppmvd corrected to 15% O<sub>2</sub> shutdown, averaged over the duration of the startup or shutdown.~~

A new condition D.2.16 is added as follows:

**D.2.16 Oxides of Nitrogen NO<sub>x</sub> (SCR operation) [326 IAC 2-2]**

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- (a) Pursuant to 326 IAC 2-2 (PSD requirements), the Permittee shall determine the lowest SCR inlet flue gas temperature during the stack test required in condition D.2.15 (a) (c) that demonstrates compliance with limits in condition D.2.6, as approved by IDEM.**
- (b) From the date of the valid stack test, during a startup, the Permittee shall measure and record temperature of the catalyst bed and start ammonia injection in the SCR units to control NO<sub>x</sub> emissions from the gas turbines, as soon as the catalyst bed reaches the temperature determined in part (a) above or turbine load reaches 70%, whichever occurs earlier.**

The subsequent conditions in the permit are renumbered to reflect this change.

**B. Changes to the Performance Testing condition D.2.15**

1. Revise the condition to clarify that performance testing must be conducted "within sixty (60) days of achieving maximum production rate" and not "within sixty (60) days after initial startup" as being presently stated in the permit. This is to make this aspect consistent with IDEM intent for this condition.
2. The Permittee has already tested formaldehyde emissions from combustion turbines CT11 and CT12 in the simple cycle mode, exhausting to stacks E11 and E12 for multiple load conditions. Therefore, repeat requirement for the formaldehyde testing, when operating in combined cycle mode will be redundant and economic burden on the Permittee. This is because no new formaldehyde emissions are expected because of the conversion of the turbines from simple cycle to combined cycle at part load conditions. The addition of duct burners in the combined cycle mode is expected to contribute additional formaldehyde emissions when turbine is operating at 100% load. This is because the duct burners are fired at this load condition only. Therefore, the testing requirement at 100% load for stack E11A and E12A is retained in the permit and full load firing of duct burners is required during this testing.

3. The Permittee in condition D.2.15 (e) is required to test PM<sub>10</sub> (filterable and condensable emissions from the combustion turbines to show compliance with the limit. In recent experience IDEM, OAQ has observed that it is extremely difficult to generate accurate emission rate numbers for PM<sub>10</sub> emissions from natural gas fired combustion turbines. In recent permits IDEM, OAQ has not required Permittees to show compliance with this limit. Therefore, the PM<sub>10</sub> testing requirement in this condition is removed from the permit.
4. The Permittee has also requested to remove the NSPS testing requirement in the combined cycle mode at less than 100% load condition for NO<sub>x</sub> emissions, because this testing has already been performed in simple cycle mode. IDEM, OAQ has advised the Permittee to seek this exemption from U.S.EPA's Region 5 office because this requirement is part of the federal regulation applicable to this operation.

The condition D.2.15 is revised as follows:

#### D.2.15 Performance Testing

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- (a) Pursuant to 326 IAC 3-5 the Permittee shall conduct a performance test, no later than one-hundred and eighty days (180) after the facility startup or monitor installation, on the combustion turbine exhaust stack (E11A, E12A, E21A, and E22A) in order to certify the continuous emission monitoring systems for NO<sub>x</sub> and CO.
- (b) Within sixty (60) days ~~after initial startup~~ **of achieving maximum production rate**, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform formaldehyde stack tests ~~for each combustion turbines stack (E11A, E12A, E21A, and E22A)~~ **on stacks E21A and E22A only. In addition during the same time period specified earlier, the Permittee shall perform formaldehyde stack tests for combustion turbines for stacks E11A, E12A, E21A and E22A when operating the combustion turbines at 100% load and each duct burner being fired to full capacity.** These tests shall be performed in accordance with Section C – Performance Testing, in order to verify the formaldehyde emission ~~factor~~ **limit** specified in ~~e~~Condition D.2.12.
- (c) Within sixty (60) days ~~after initial startup~~ **of achieving maximum production rate**, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform NO<sub>x</sub> and CO stack tests for each combustion turbine stack (E11A, E12A, E21A, and E22A) during a startup/shutdown period, utilizing methods approved by the Commissioner. These tests shall be performed in accordance with Section C – Performance Testing, in order to document compliance with Conditions D.2.5.
- (d) Within sixty (60) days of achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall conduct NO<sub>x</sub> and SO<sub>2</sub> stack tests for each combustion turbine stack (E11A, E12A, E21A, and E22A) utilizing methods approved by the Commissioner. These tests shall be performed in accordance with 40 CFR 60.335 and Section C – Performance Testing, in order to document compliance with Condition D.2.10.
- (e) Within sixty (60) days ~~after initial startup~~ **of achieving maximum production rate**, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform PM, ~~PM<sub>10</sub> (filterable and condensable)~~, ammonia, and VOC stack tests for each combustion turbine stack (E11A, E12A, E21A, and E22A) utilizing methods approved by the Commissioner. These tests shall be performed in accordance with 40 CFR 60.335, 40 CFR 60.48(a), and Section C – Performance Testing, in order to document compliance with D.2.2(b), D.2.9, and D.2.13.

- (f) IDEM, OAQ and VCAPC retain the authority under 326 IAC 2-1-4(f) to require the Permittee to perform additional and future compliance testing as necessary.

*C. Changes to the Particulate Matter emissions limits condition D.2.2*

The permit specifies in condition D.2.2 the particulate matter limit as “the total PM is sum of PM (filterable) and PM<sub>10</sub> (filterable and condensible)”. The Permittee has requested that this language is confusing and could conceivably result in double counting PM (filterable) emissions to show compliance with the limit. IDEM, OAQ verified the record and compared the PM/PM<sub>10</sub> limit to other similar operations. The condition does not have the clarity and can conceivably be biased against the company, which was not the IDEM, OAQ intent at the time of writing the permit. Therefore, IDEM, OAQ proposes to revise this condition to match the language in similar condition in permits recently issued for this type of processes. The condition D.2.2 is revised as follows:

D.2.2 Particulate Matter (PM/PM<sub>10</sub>) Emission Limitations for Combustion Turbines/Duct Burners

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements), the ~~total PM is the sum of PM (filterable) and or PM<sub>10</sub> (filterable and condensible)~~, emissions from each combustion turbine shall not exceed 0.012 pounds per MMBtu (on a lower heating value basis) which is equivalent to eighteen (18) pounds per hour for each combustion turbine.
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the ~~total PM, sum of PM (filterable) and or PM<sub>10</sub> (filterable and condensible)~~, emissions from each duct burner shall not exceed 0.0075 pounds per MMBtu on a higher heating value basis, which is equivalent to 2.2 pounds per hour.
- (c) Pursuant to 326 IAC 2-2 (PSD Requirements), the ~~total PM is the sum of PM (filterable) and or PM<sub>10</sub> (filterable and condensible)~~, emissions from each combustion turbine when its associated duct burner is operating, shall not exceed 20.2 pounds per hour for each combustion turbine and duct burner.

*D. Corrections of Typographical Errors and other changes in Conditions D.2.6, D.2.7, D.2.8 and D.2.9*

The conditions D.2.6, D.2.7 and D.2.8 contain a description of what the ‘normal combined cycle operation’ is. IDEM, OAQ has revised the normal operation description in condition D.2.5. Therefore, the descriptions in conditions D.2.6, D.2.7 and D.2.8 are changed. The typographical errors are corrected in the Conditions D.2.6, D.2.7, D.2.8 and D.2.9 as follows:

D.2.6 Nitrogen Oxides (NO<sub>x</sub>) Emission Limitations for Combustion Turbines/Duct Burners

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements) each combustion turbine/steam generating unit shall comply with the following, excluding startup and shutdown:
- (1) During normal combined cycle operation (~~fifty (50) percent load or more~~), the NO<sub>x</sub> emissions from each combustion turbine stack shall not exceed 3.0 ppmvd corrected to fifteen (15) percent oxygen, based on a three (3) hour averaging period, which is equivalent to 17.89 pounds per hour for each combustion turbine.
- (2) During normal combined cycle operation (~~fifty (50) percent load or more~~), the NO<sub>x</sub> emissions from each combustion turbine stack, when its associated duct burner is operating, shall not exceed 3.0 ppmvd corrected to fifteen (15) percent oxygen, based on a three (3) hour averaging period, which is equivalent to 18 pounds per hour for each combustion turbine and duct burner.
- (3) The duct burners shall not be operated until normal operation begins.

- (4) Each combustion turbine shall be equipped with dry low-NO<sub>x</sub> burners and operated using good combustion practices to control NO<sub>x</sub> emissions.
- (5) A selective catalytic reduction (SCR) system shall be installed and operated at all times, except during periods of startup and shutdown, to control NO<sub>x</sub> emissions.
- (6) Use natural gas as the only fuel.
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the annual NO<sub>x</sub> emissions from each of the four (4) combustion turbines and associated duct burners, excluding startup and shutdown emissions, shall not exceed 78.36 tons per year.

#### D.2.7 Carbon Monoxide (CO) Emission Limitations for Combustion Turbines/Duct Burners

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements), each steam generating unit shall comply with the following, excluding startup and shutdown:
  - (1) During normal combined cycle operation (~~fifty (50) percent load or more~~), the CO emissions from each combustion turbine shall not exceed 9 ppmvd corrected to 15% O<sub>2</sub> on a 24 hour averaging period, which is equivalent to 26.4 pounds per hour for each combustion turbine.
  - (2) During normal operation (~~fifty (50) percent load or more~~), the CO emissions from each combustion turbine stack, when its associated duct burner is operating, shall not exceed 14 ppmvd corrected to 15% O<sub>2</sub> on a 24 hour averaging period, which is equivalent to 51.0 pounds per hour for each combustion turbine and duct burner.
  - (3) The duct burners shall not be operated until normal operation begins.
  - (4) Good combustion practices shall be applied to minimize CO emissions.
  - (5) Use natural gas as the only fuel
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the annual ~~NO<sub>x</sub>~~ **CO** emissions from each of the four (4) combustion turbines and associated duct burners, excluding startup and shutdown emissions, shall not exceed 131.86 tons per year.

#### D.2.8 Sulfur Dioxide (SO<sub>2</sub>) Emission Limitations for Combustion Turbines/Duct Burners

- Pursuant to 326 IAC 2-2 (PSD Requirements), each combustion turbine and duct burner shall comply with the following, excluding startup and shutdown:
- (1) During normal combined cycle operation (~~fifty (50) percent load or more~~), the SO<sub>2</sub> emissions from each combustion turbine shall not exceed 0.0028 pounds per MMBtu on a lower heating value basis, which is equivalent to 4.2 pounds per hour for each combustion turbine.
  - (2) During normal operation of each duct burner, the SO<sub>2</sub> emissions shall not exceed 0.001 pounds per MMBtu on a higher heating value basis, which is equivalent to 0.2 pounds per hour for each combustion turbine.
  - (3) During normal combined cycle operation of each combustion turbine when its associated duct burner is operating, the SO<sub>2</sub> emissions from each turbine stack shall **not exceed** 4.4 pounds per hour.
  - (4) The use of low sulfur natural gas as the only fuel for the combustion turbines and duct burners. The sulfur content of the natural gas shall not exceed 0.007 percent by weight

(two (2) grains per 100 scf).

- (5) Perform good combustion practice.

#### D.2.9 Volatile Organic Compound (VOC) Emission Limitations for Combustion Turbines/Duct Burners

Pursuant to 326 IAC 8-1-6 (VOC Requirements) and 326 2-2 (PSD Requirements), the following requirements must be met, excluding startup and shutdown:

- (1) The VOC emissions from each combustion turbine shall not exceed 0.0025 pounds per MMBtu on a lower heating value basis, which is equivalent to 3.7 pounds VOC per hour for each combustion turbine.
- (2) The VOC emissions from each duct burner shall not exceed 0.005 pounds per MMBtu on a higher heating value basis, which is equivalent to 1.6 pounds VOC per hour.
- (3) The VOC emissions from each combustion turbine stack, when its associated duct burner is operating shall not **exceed** 5.3 pounds of VOC per hour.
- (4) The use of natural gas as the only fuel.
- (5) Good combustion practice shall be implemented to minimize VOC emissions.

#### E. Corrections to reporting form for startup and shutdowns for the combined cycle operation

The quarterly report form is revised as follows:

### Indiana Department of Environmental Management Office of Air Quality Compliance Data Section and Vigo County Air Pollution Control Quarterly Report

Company Name: Mirant Sugar Creek LLC  
Location: 5900 Darwin Road, West Terre Haute, IN 47885  
Permit No.: CP-167-12208-00123  
Source: Four (4) natural gas combustion turbines operating in combined cycle, **please copy and use separate form for each turbine**  
Limit: Four (4) hours per startup, and 500 hours per year for startups. Four (4) hours per shutdown, and 83 hours per year for shutdowns.  
**6.5 hours per event (where an event consists of one startup and one shutdown). The time period on annual basis for events not to exceed 583 hours per 12 consecutive month period with compliance demonstrated at the end of each month.**

Month: \_\_\_\_\_ Year: \_\_\_\_\_  
Total hours from previous month(s) startup \_\_\_\_\_ shutdown \_\_\_\_\_  
Total hours per year for startup and shutdown for 12 month period \_\_\_\_\_

Day/ Turbine	Startup				Shutdown				Day/ Turbine	Startup				Shutdown			
	1	2	3	4	1	2	3	4		1	2	3	4	1	2	3	4
1									17								
2									18								
3									19								
4									20								
5									21								

6									22								
7									23								
8									24								
9									25								
10									26								
11									27								
12									28								
13									29								
14									30								
15									31								
16									Total								

? No deviation occurred in this month ? Deviation/s occurred in this month.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title/Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Year: \_\_\_\_\_  
Turbine ID: \_\_\_\_\_

Month	Column 1 hours during events this month	Column 2 hours during events during previous 11 months	Column 1 + Column 2 hours during events for twelve month period
	Hours	Hours	Hours

☐ No deviation occurred in this month ☐ Deviation/s occurred in this month.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title/Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

### Existing Approvals

The source was issued a Construction Permit CP 167-12208-00123 on May 09, 2001. The source has since received the following:

- (a) First Significant Modification No.: 167-15295, issued on July 24, 2002; and
- (b) First Notice Only Change No.: 167-15906, issued on August 06, 2002.

The changes made in these approvals are also incorporated in the modified permit document for this approval.

### Recommendation

The staff recommends to the Commissioner that the Significant Modification be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

Applications for the purposes of this review were received on January 10, 2003 and additional information was received on January 22, 2002.

### Emission Calculations

There are no new emission units being constructed or existing units being modified. Also the allowable emissions remain unchanged from the original permit. Therefore no emission calculations are required for this change.

### Justification for Modification

The construction permit CP 167-12208-00123 is being modified under the provisions of 326 IAC 2-2 and IC 13-15-7-1. This is because the startup/shutdown limitations established through the PSD process are being revised through this approval. Also, the Permittee has not yet begun commercial operation of the combined cycle mode of the project in accordance with CP 167-12208-00123 at the time of this modification. Therefore, because of these factors, this modification will be subject to the requirements of public notice and will have 30 day public comment period.

### County Attainment Status

The source is located in Vigo County.

Pollutant	Status
PM-10	Attainment
SO <sub>2</sub>	Attainment
NO <sub>2</sub>	Attainment
Ozone	Attainment
CO	Attainment
Lead	Attainment

- (a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Vigo County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (b) Vigo County has been classified as attainment or unclassifiable for PM-10, SO<sub>2</sub>, NO<sub>2</sub>, Lead and CO. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.



### **Source Status**

This existing source is a major stationary source because an attainment regulated pollutant is emitted at a rate of 100 tons per year or more, and it is one of the 28 listed source categories. The source was issued a PSD construction permit 167-12208-00123 on May 09, 2001.

### **Federal and State Rule Applicability**

There are no new rules applicable to this Source because of these changes in the permit.

### **Conclusion**

The proposed modification shall be subject to the conditions of the attached proposed Permit. 167-17117-00123.